

Railway Age Gazette

DAILY EDITION

Copyright, 1912, by the Simmons-Boardman Publishing Co.

Vol. 52. NEW YORK—JUNE 12, 1912—ATLANTIC CITY. No. 23a.

PUBLISHED EVERY FRIDAY AND DAILY EIGHT TIMES IN JUNE, BY
SIMMONS-BOARDMAN PUBLISHING CO., 83 FULTON ST., NEW YORK.CHICAGO: 417 South Dearborn St. CLEVELAND: Citizens Bldg.
LONDON: Queen Anne's Chambers, Westminster.

E. A. SIMMONS, President.

L. B. SHERMAN, Vice-President.

HENRY LEE, Sec'y & Treas.

The address of the company is the address of the officers.

EDITORS:

SAMUEL O. DUNN, Editor.

BRADFORD BOARDMAN, Man'g Editor.

ROY V. WRIGHT

G. L. FOWLER

WILLIAM FORSYTH

W. E. HOOPER

R. E. THAYER

E. S. FAUST

E. A. AVERILL

REPRESENTATIVES:

FRANK S. DINSMORE

CECIL R. MILLS

A. E. HOOVEN

KENNETH G. CLOUD

W. D. HORTON

W. W. NEWCOMB

Subscriptions, including 52 regular weekly issues and special daily editions
published from time to time in New York, or in places other than New
York, payable in advance and postage free:

United States and Mexico.....	\$5.00
Canada	8.00
Foreign Countries (excepting daily editions).....	8.00
Single Copies	15 cents each

Engineering and Maintenance of Way Edition and the four Maintenance
of Way Convention Daily issues, North America, \$1.00; foreign, \$2.00.Entered at the Post Office at New York, N. Y., as mail matter of the
second class.

CONTENTS.

EDITORIAL:

Editorial Notes	1265
Improved Brake Methods.....	1266

ANNOUNCEMENTS	1267
---------------------	------

MISCELLANEOUS:

A Railway Plank for Both Political Platforms.....	1270
Ou Sont les Fleurs D'Antan.....	1271
Railway Supply Manufacturers' Association.....	1272
The Chilled Iron Car Wheel.....	1275
M. C. B. Registration.....	1276
The Special Train from Chicago.....	1277
Steel Underframe Tank Cars.....	1278
The New York Special Train.....	1280
Pressure on Journal-Bearing Wedges.....	1280

CONVENTIONALITIES	1281
-------------------------	------

THE EXHIBIT	1283
-------------------	------

List of Exhibitors	1285
--------------------------	------

NOTICE OF COPYRIGHT.

THIS and all subsequent issues of the DAILY RAILWAY AGE
GAZETTE published in connection with the 1912 meetings
of the Master Car Builders' Association and the American
Railway Master Mechanics' Association are copyrighted
under the United States copyright law by the Simmons-
Boardman Publishing Company, publishers of the RAILWAY
AGE GAZETTE, and all persons are hereby warned against mak-

ing unauthorized use of any of the contents of the DAILY,
whether reading matter or illustrations.

It is due to our readers, and especially to the members
of the Master Car Builders' Association and the American
Railway Master Mechanics' Association that explanation
should be made of our action in copyrighting the contents of
the DAILY. It is well known that we have from year to year
incurred much expense for the purpose of furnishing our
readers with early, complete and properly edited stenographic
reports of the proceedings of the conventions of these asso-
ciations. It has likewise been the custom of other publica-
tions to appropriate column after column of these edited re-
ports of the proceedings and republish them without asking
the consent of the RAILWAY AGE GAZETTE or giving to it any
credit whatever. This habitual pirating of the fruits of our
labors and expenditures has become intolerable and we have
copyrighted all of the reading pages of the DAILY for the
purpose of stopping it.

We desire in this connection expressly to disavow any
desire or purpose to interfere with the publication or use
by the associations or their members of either their own
reports of the proceedings, or of the reports made by the
DAILY RAILWAY AGE GAZETTE. So far as the proceedings of
the conventions are concerned, our copyright covers them
only as they are reported by the DAILY RAILWAY AGE GAZETTE.
And the Associations and their members individually are
hereby authorized to make any use they desire of our reports,
except that they must not be republished without the express
permission of the Simmons-Boardman Publishing Company,
in any publication or periodical except those issued by the
Master Car Builders' Association or the American Railway
Master Mechanics' Association.

IN passenger service the weight of coaches, sleepers and
all other cars, excepting baggage and express cars, is prac-
tically constant, and the brake power is usually over 100
per cent. of the car weight, but in freight service this power
is 75 to 80 per cent. of the light weight of the car, or only
about 15 per cent. of the total weight of car and lading. It
has been thought desirable for a long time to increase the
brake power when freight cars are loaded with a heavy ton-
nage, and the extensive use of 50-ton ore and coal cars has
stimulated the effort to produce a practical brake which will
accomplish this purpose. Such a brake, known as the light
and loaded equipment brake, is now in successful use on a
number of western lines, where heavy mountain grades have
made it essential for safe operation. The experience with
the brake in such places has demonstrated that it possesses
incidental advantages which render it a desirable equipment
for all lines where a heavy traffic in coarse commodities is
hauled, not only in solid trains of 50-ton cars, but when such
cars are mixed with lighter loads. By the use of this new
brake equipment the operation of heavy trains on the level
is made smoother and safer, and it is probable that these
advantages will lead to its introduction on lines in mineral
districts where grades are light.

FOR some time the principal interest in published articles on
car wheels has centered in the steel wheel, and little has
been said as to the merits of the chilled cast iron wheel.
The communication regarding cast iron wheels, which we
publish on another page, will, therefore, be read with in-

terest. The figures showing the very large number of cast wheels in service, and the low cost of the wheels per car per year indicate the vast benefits the railways have obtained from the use of this wheel and the important contribution it has made toward the low cost of freight transportation in this country. Although its limitations as to car capacity have been frequently announced, the cast iron wheel continues to render good service under the heaviest freight equipment, and the makers do not hesitate to recommend it for the highest capacity cars thus far contemplated. The principal limiting feature is the flange, which for obvious reasons has not increased with the comparatively small increase in other dimensions, and the plea of the wheel makers for a larger space between main and guard rails so that thicker flanges can be used, is one which should be seriously considered by railway managers.

THE first convention of the Master Car Builders' Association to be held at Saratoga was in 1884 and the next in 1892. It was held in the same place for five successive years, 1900 to 1904 inclusive. The first one held in Atlantic City was in 1906, and since that time it has been the accepted place, so that the present meeting is the seventh to be held here. At the meeting twenty years ago in Saratoga, the total membership reported was 298, and the number of cars represented was 1,071,219. The president, John Kirby, the "grand old man" who is still with us, announced that 150,000 freight cars were then equipped with automatic couplers. The Fox pressed steel truck was then such a novelty that special attention was called to its merits. In referring to the rules of interchange, Mr. Kirby said, "I hope no very radical changes will be made in these rules. They have been in operation long enough to demonstrate that the less intricate they can be made the more useful they will be to those who have to do with the interchange of cars. Lop off only such excrescences as tend more to perplex than to enlighten." The reports read at this meeting included one on cast wheels, in which the advantages of the contracting chill were explained, and one on wheel tests made at the Sacramento shops of the Southern Pacific in 1891. These tests were made with a view of determining the cause of the frequent cracking of wheel plates on mountain grades, and they led to the use of the rim heating test in the cast iron wheel specification. At this meeting the first complete specification for automatic couplers was presented; it included the limit gages and required that couplers must endure a pulling test of not less than 100,000 lbs. and under the drop they must stand three blows from 10 ft. and two blows from 15 ft. A brief report on freight car truck frames considered the relative advantages of swinging and rigid bolsters; a majority of replies to the circular favored the rigid type.

IMPROVED BRAKE METHODS

THE remarkable improvements which have been made in air brake mechanism and brake methods in the past three years have not yet received prominent notice, chiefly for the reason that they have not been applied to any large extent, and some of them remain to be thoroughly tested in a service which will properly represent general practice. These improvements are the results of the severe demands which are made on the brake apparatus by the increase in the weight of cars, the increase in the speed of trains and the heavier brake shoe pressure which such service requires. Progress in the development of most railway appliances is the result of undue wear or the breaking down of structures which are too weak for the increasing loads placed on them, and air brake improvements are following a similar course.

The increase in the weight of passenger equipment continued gradually until it was found that the best stop which

could be made by existing brake equipment was considerably longer than that made in previous years with lighter equipment. The improvements in the brake apparatus found necessary to meet this condition have considerably increased the ratio of brake power to car weight and the brake shoe pressure, and this in turn has increased the wear of brake shoes to such an extent that methods are now sought to economize in brake shoe expense.

The extent to which the ratio of brake power to car weight must be increased with various wheel loads in order that the stop may be made in 1,000 to 1,200 ft. is shown in Fig. 1 in our report of the annual meeting of the Air Brake Association. (RAILWAY AGE GAZETTE, May 17, page 1093.) In Fig. 2 on the same page is shown the relative braking power required for cars of different weights to produce the same retarding force, or length of stop. These diagrams are worthy of careful study, as they reveal the brake necessities of modern passenger service, and show at once that present methods now in general use are not equal to the requirements. They are from a paper by R. C. Augur on Friction and Wear of Brake Shoes as Affected by the Wheel Load or Car Weight, which is an admirable presentation of the present day brake problem so far as it is affected by brake shoe conditions. The author's study of the accumulated results of brake tests and brake shoe tests convinces him that the present method of proportioning braking power on passenger cars to 90 per cent. of the weight, based on a brake cylinder pressure of 60 lbs., is no longer tenable and must become obsolete in the near future. In order to operate fast passenger trains with smoothness and safety it is necessary to adopt a sliding scale for proportioning braking power, and it is proposed where 90 per cent. is assumed as satisfactory brake power for cars having a wheel load below 6,000 lbs. that for every 100 lbs. increase in wheel load in excess of 6,000 lbs. an addition of one per cent. braking power should be made.

The efficiency of the brake depends largely on the coefficient of friction of the brake shoe, in fact, they may be regarded as identical, and as an average for passenger car conditions this coefficient is only about 12 per cent. Brake power should, therefore, be proportioned in accordance with the laws of brake shoe friction and in order to allow for the decrease of the coefficient with heavy brake beam pressures, increasingly higher percentages of brake power should be used as the weight of cars is increased. A study of the tests made on the M. C. B. brake shoe testing machine, as reported in the 1911 M. C. B. proceedings, shows that the work in stopping from a speed of 60 miles per hour is 2.25 times that in stopping from 40 miles per hour, and the actual amount of metal worn from the shoes on a 90,000 lb. car at a 60-mile stop is 2.5 times as much as from a 40-mile stop, while with a 120,000 lbs. car it is 3.2 times as much. This is an indication of the rapid wear of brake shoes under present conditions of brake equipment, in spite of the steady effort and intelligent work that has been done in improving the quality of the brake shoe metal.

It is possible that brake shoe pressures now found necessary for efficient braking are higher than good practice would dictate, and it is desirable to make improvements in other directions, as lower pressure would result in a higher coefficient of friction and a lower rate of wear. At the recent meeting of the Air Brake Association the advantages of clasp brakes, where two shoes are used for each wheel, were demonstrated, and the practice as now employed by the Philadelphia and Reading on four-wheel and six-wheel trucks was explained. By this method a sufficient retarding effect is obtained with moderate brake shoe pressures, and less wear and lower temperatures for the shoe and wheel. The new all-steel suburban cars for the New York, Westchester & Boston are also equipped with clasp brakes.

Announcements.

PROGRAM OF THE WEEK.

MASTER CAR BUILDERS' CONVENTION.

WEDNESDAY, JUNE 12.

Prayer	9.30 A. M. to 9.35 A. M.
Address by the president.....	9.35 A. M. to 10.30 A. M.
Reading of the minutes of the last meeting	10.30 A. M. to 10.35 A. M.
Report of the secretary and treasurer	10.35 A. M. to 10.50 A. M.
Assessment and announcement of annual dues; appointment of committees on correspondence, resolutions, obituaries, etc.....	10.50 A. M. to 11.00 A. M.
Election of auditing committee....	11.00 A. M. to 11.05 A. M.
Unfinished business	11.05 A. M. to 11.10 A. M.
New business	11.10 A. M. to 11.20 A. M.
Discussion of reports on:	
Nominations	11.20 A. M. to 11.30 A. M.
Revision of Constitution	11.30 A. M. to 11.45 A. M.
Revision of Standards and Recommended Practice	11.45 A. M. to 12.00 M.
Train Brake and Signal Equipment	12.00 M. to 12.30 P. M.
Brake Shoe Equipment.....	12.30 P. M. to 1.00 P. M.
Car Wheels	1.00 P. M. to 1.30 P. M.

THURSDAY, JUNE 13.

Discussion of reports on:	
Safety Appliances	9.30 A. M. to 10.00 A. M.
Rules of Interchange.....	10.00 A. M. to 10.30 A. M.
Prices for Labor and Materials. }	
Rules for Loading Material....	10.30 A. M. to 10.45 A. M.
Damage to Freight Equipment by Unloading Machines	10.45 A. M. to 11.00 A. M.
Overhead Inspection	11.00 A. M. to 11.15 A. M.
Coupler and Draft Equipment..	11.15 A. M. to 12.15 P. M.
Car Trucks	12.15 P. M. to 12.30 P. M.
Springs for Car Trucks	12.30 P. M. to 1.00 P. M.
Consolidation	1.00 P. M. to 1.10 P. M.
Train Lighting and Equipment....	1.10 P. M. to 1.30 P. M.

FRIDAY, JUNE 14.

Individual paper, Car Shop Apprentices, I. S. Downing, M. C. B., L. S. & M. S.....	9.30 A. M. to 10.00 A. M.
Discussion of reports on:	
Train Pipe and Connections for Steam Heat	10.00 A. M. to 10.30 A. M.
Tank Cars	10.30 A. M. to 11.00 A. M.
Specifications for Tests of Steel Truck Sides and Bolsters.....	11.00 A. M. to 11.30 A. M.
Capacity Marking of Cars.....	11.30 A. M. to 11.45 A. M.
Lettering Cars	11.45 A. M. to 12.00 M.
Unfinished business; reports of committees on correspondence, resolutions and such other committees as may be named during the convention	12.00 M. to 12.15 P. M.
Election of officers.....	12.15 P. M. to 1.30 P. M.

Adjournment.

ENTERTAINMENT.

WEDNESDAY, JUNE 12.

Orchestra Concert, 10.30 A. M.—Entrance Hall, Million Dollar Pier.

Orchestra Concert, 3.30 P. M.—Entrance Hall, Million Dollar Pier.

Social Gathering and Informal Dance, 9.00 P. M.—Blenheim Exchange, Marlborough-Blenheim Hotel.

THURSDAY, JUNE 13.

Orchestra Concert, 10.30 A. M.—Entrance Hall, Million Dollar Pier.

Orchestra Concert, 3.30 P. M.—Entrance Hall, Million Dollar Pier.

Informal Dance, 9.30 P. M.—Entrance Hall, Million Dollar Pier.

FRIDAY, JUNE 14.

Orchestra Concert, 10.30 A. M.—Entrance Hall, Million Dollar Pier.

Orchestra Concert, 3.30 P. M.—Entrance Hall, Million Dollar Pier.

Musical, 9.00 P. M.—Entrance Hall, Million Dollar Pier.

SATURDAY, JUNE 15.

Orchestra Concert, 10.30 A. M.—Entrance Hall, Million Dollar Pier.

Base Ball Parade, 2.00 P. M.—Million Dollar Pier to special trolley cars.

Base Ball Game, 3.00 P. M.—East v. West, Pennsylvania Railroad Company's Inlet Park Base Ball Grounds. Free trolley cars for those wearing the official badge.

SUNDAY, JUNE 16.

Concert, 11.00 A. M.—Marlborough-Blenheim Hotel Orchestra, Leo Sachs, musical director: Largo (*Handel*); Two Intermezzi from the Opera, The Jewels of the Madonna (*Wolf-Ferrari*); Andante Cantabile from the String Quartet (*Tschaikowski*); Serenade (*Drdla*); Suite (*Kate Vannah*); (a) Dawn (b) Sleepy Baby; Fantasie, La Boheme (*Buccini*), Violin Solo; Andante from the Concerto (*Bruch*), Michael Benner; Ave Maria (*Gounod*).

CONCERT, 8.45 P. M.—Overture, Tannhauser (*Wagner*), Violin Solo; Faust Fantasie (*Wieniowski*), Michael Benner; Fantasie Samson et Delila (*Saint-Saens*), Cello Solo; Tartantalla (*Popper*), Leo Sachs; The Lost Hope (*Gottschalk*), Piano Solo; Polonais (*Liszt*), Henry Gruhler; Hungarian Rhapsody No. 2 (*Liszt*).

M. C. B. ASSOCIATION OFFICERS, 1911-1912.

President, A. Stewart, G. S. M. P. & E., Southern Ry.; first vice-president, D. F. Crawford, G. S. M. P., Penna. Lines; second vice-president, C. E. Fuller, A. G. M., Union Pacific; third vice-president, M. K. Barnum, G. S. M. P., Illinois Central; treasurer, John S. Lentz, M. C. B., Lehigh Valley; secretary, Joseph W. Taylor, Chicago. Executive members, J. D. Harris, Baltimore, Md.; Henry Bartlett, G. S. M. D., Boston & Maine; C. A. Seley, M. E., C. R. I. & P.; F. W. Brazier, S. R. S., N. Y. C. & H. R.; C. A. Schroyer, S. C. D., C. & N. W.; Alex. Kearney, A. S. M. P., Norfolk & Western.

STANDING COMMITTEES.

Arbitration.—J. J. Hennessey (chairman), M. C. B., C. M. & St. P.; T. W. Demarest, S. M. P., Penna. Lines; J. S. Lentz, M. C. B., Lehigh Valley; E. D. Bronner, S. M. P., Mich. Cent.; M. K. Barnum, G. S. M. P., Illinois Central.

Revision of Standards and Recommended Practice.—T. H. Goodnow (chairman), M. C. B., Armour Car Lines; W. E. Dunham, supervisor M. P., C. & N. W.; W. H. V. Rosing, asst. to V. P., St. L. & S. F.; C. E. Fuller, A. G. M., Union Pacific; T. M. Ramsdell, M. C. B., Ches. & Ohio; O. C. Cromwell, M. E., Balto. & Ohio R. R.

Train Brake and Signal Equipment.—R. B. Kendig (chairman), G. M. E., N. Y. C. Lines; T. L. Burton, gen. inspr., C. R. R. of N. J.; B. P. Flory, S. M. P., N. Y. O. & W.; E. W. Pratt, A. S. M. P., C. & N. W.; R. K. Reading, S. M. P., Penna. Lines.

Brake Shoe Equipment.—Chas. H. Benjamin (chairman), Purdue University; C. D. Young, eng. tests., Penna. R. R.; R. B. Kendig, G. M. E., N. Y. C. Lines, New York City.

Coupler and Draft Equipment.—R. L. Kleine (chairman), C. C. I.; G. W. Wildin, M. S., N. Y. N. H. & H.; F. W. Brazier, S. R. S., N. Y. C. & H. R.; F. H. Stark, Supt., Pittsburgh Coal

Co.; H. La Rue, M. C. B., C. R. I. & P.; H. L. Trimyer, M. C. B., S. A. L.; J. F. Devoy, A. S. M. P., C. M. & St. P.

Rules for Loading Materials.—A. Kearney (chairman), A. S. M. P., N. & W.; R. E. Smith, G. S. M. P., A. C. L.; C. H. Osborne, A. S. C. D., C. & N. W.; L. H. Turner, S. M. P., P. & L. E.; W. F. Kiesel, Asst. Mech. Engr., Penna.

Car Wheels.—Wm. Garstang (chairman), S. M. P., C. C. C. & St. L.; W. C. A. Henry, S. M. P., Penna. Lines; A. E. Manchester, S. M. P., C. M. & St. P.; R. W. Burnett, G. M. C. B., Can. Pac.; R. L. Ettenger, C. M. E., Southern Ry.; J. A. Pilcher, M. E., N. & W.; O. C. Cromwell, M. E., B. & O. R. R.

Safety Appliances.—A. Stewart (chairman), G. S. M. P. & E., Southern Ry.; A. La Mar, M. M. I., Penna. Lines; C. B. Young, M. E., C. B. & Q.; H. Bartlett, G. S. M. P., B. & M.; T. M. Ramsdell, M. C. B., C. & O.; M. K. Barnum, G. S. M. P., Ill. Cent.; W. O. Thompson, M. C. B., N. Y. C. & H. R.

SPECIAL COMMITTEES.

1. *Car Trucks:* A. S. Vogt (chairman), M. E. Penna.; C. A. Seley, M. E., C. R. I. & P.; J. J. Tatum, S. F. C. D., B. & O.; G. A. Hancock, G. S. M. P., St. L. & S. F.; F. P. Pfahler, M. E., Wheeling & Lake Erie; N. L. Friesse, G. F. C. D., N. & W.

2. *Prices for Labor and Material:* F. H. Clark (chairman), G. S. M. P., B. & O.; G. E. Carson, D. M. C. B., N. Y. C. & H. R.; C. F. Thiele, G. C. I., P. C. C. & St. L.; Ira Everett, G. F. C. R., Lehigh Valley; B. Julien, G. C. F., Union Pacific; S. T. Park, S. M. P., C. & E. I.; H. E. Passmore, M. M., T. & O. C.

3. *Springs for Freight Car Trucks:* W. F. Kiesel (chairman), Asst. Mech. Engr., Penna.; T. A. Lawes, M. E., N. Y. C. & St. L.; J. R. Onderdonk, Engr. Tests, B. & O.; J. Haines, S. M. P., Southern Ry.

4. *Consolidation:* F. H. Clark (chairman), G. S. M. P., B. & O.; W. A. Nettleton; C. A. Schroyer, S. C. D., C. & N. W.

5. *Train Lighting and Equipment:* T. R. Cook (chairman), M. M., Penna. Lines; C. A. Brandt, M. E., C. C. C. & St. L.; Ward Barnum, elec. engr., L. & N.; J. H. Davis, elec. engr., B. & O.; E. A. Benson, M. S., Pullman Co.; D. J. Cartwright, elec. engr., Lehigh Valley; E. W. Jansen, elec. engr., Illinois Central.

6. *Train Pipe and Connections for Steam Heat:* I. S. Downing (chairman), M. C. B., L. S. & M. S.; C. A. Schroyer, S. C. D., C. & N. W.; T. H. Russum, S. P. C. D., B. & O.; J. J. Ewing, M. E., C. & O.; W. C. Arp, S. M. P., Vandalia R. R., Terre Haute, Ind.

7. *Nominations:* A. W. Gibbs (chairman), C. M. E., Penna. Lines; C. A. Seley, M. E., C. R. I. & P.; W. H. Lewis, S. M. P., N. & W.; J. F. Walsh, G. S. M. P., Ches. & Ohio; H. H. Vaughan, asst. to V.-P., Can. Pac.

8. *Arrangements:* A. Stewart, G. S. M. P. & E., Southern Railway.

9. *Tank Cars:* A. W. Gibbs (chairman), C. M. E., Penna. Lines; Thomas Beaghan, Jr., M. C. B., Union Tank Line; J. W. Fogg, M. M., B. & O., Chicago Ter. Ry.; S. K. Dickerson, A. S. M. P., L. S. & M. S.; C. E. Chambers, S. M. P., C. R. R. of N. J.; E. J. Searles, asst. to G. S., B. & O.; Wm. Schlafge, G. M. S., Erie.

10. *Specifications for Tests of Steel Truck Sides and Bolsters for Cars of 80,000, 100,000 and 150,000 Pounds Capacity:* E. C. Schmidt (chairman), University of Illinois; J. S. Sheafe, engr. tests, Illinois Central; C. D. Young, engr. tests, Penna.

11. *Capacity Marking of Cars:* C. E. Fuller (chairman), A. G. M., Union Pacific; M. K. Barnum, G. S. M. P., Ill. Central; A. W. Gibbs, C. M. E., Penna. Lines; F. H. Clark, G. S. M. P., B. & O.; F. W. Brazier, S. R. S., N. Y. C. & H. R.

12. *Revision of Constitution:* D. F. Crawford (chairman), G. S. M. P., Penna. Lines; C. A. Seley, M. E., C. R. I. & P.; A. Kearney, A. S. M. P., N. & W.

13. *Lettering Cars:* D. F. Crawford (chairman), G. S. M. P., Penna. Lines; F. H. Clark, G. S. M. P., B. & O.; W. A. Nettleton; F. A. Torrey, G. S. M. P., C. B. & Q.; D. R. MacBain, S. M. P., L. S. & M. S.

BATHING ACCOMMODATIONS.

Accommodations for bathing may be had by all members and guests of the conventions wearing the official badges at the following rates, including suits:

Reed's Baths (Boardwalk under Hotel Dennis)—25 and 50 cents per person.

Brighton Casino (With indoor swimming pool)—50 cents per person.

Free admission to the Brighton Casino (including concert, reading and writing rooms) will be given to members and guests wearing official badges.

These rates apply only to those wearing the official badge.

WEAR YOUR OFFICIAL BADGE.

As all members and guests of the associations are not known to the entertainment committee, who must use due diligence to insure their protection and privileges, they will greatly assist in this work by wearing their official badges at all times during the conventions.

COMPLAINTS.

The committee of arrangements, A. Stewart, H. T. Bentley and B. E. D. Stafford, will be glad to undertake to adjust all complaints of any nature during the convention. Communications should be sent to the office of the secretary of the Railway Supply Manufacturers' Association, Million Dollar Pier.

STENOGRAPHIC SERVICE.

Two Edison business phonographs have been installed in Booths 625 and 627 (near Convention Hall), where they may be used without charge by railway and supply men. The machines will be in the hands of competent operators, and all are cordially requested to make liberal use of them in handling correspondence.

ROLLING CHAIRS.

The Shill Rolling Chair Company has been officially authorized to rent rolling chairs for the use of the members and guests wearing official badges of the conventions. Coupons will be issued in books of 10 and 20 coupons, each coupon 25 cents. The purchaser will be allowed a discount of 20 per cent from the face value of each book purchased, and the coupon will be accepted by the chair company for use of chair at face value. These coupons will be good both day and evening.

Rental Rates for Chairs.—One or two persons, 50 cents per hour. Three persons, 75 cents per hour. After the first hour, half-hour fractions will be charged. Special trips, hotel to pier, pier to hotel, or hotel to hotel, 25 cents per person, when the station manager is notified in advance and the trip made direct without stops. Double chairs, with attendant, from 9 a. m. to 6 p. m., \$2.50 per day. Double chairs, with attendant, from 9 a. m. to 12 midnight, \$4 per day. When the chair is engaged by the hour, the time to return to the original station is included.

All chairs must be engaged at the following stations, at which the coupon books may be procured. Ostend Hotel, Shelburne Hotel, Dennis Hotel, Berkley Cafe, Chalfonte Hotel, N. Carolina Ave., Bothwell Hotel, Seaside Ave., Gladstone Hotel, Marlborough Hotel, Traymore Hotel, Princess Hotel, Haddon Hall, Pennsylvania Ave., Islesworth Hotel, Rudolph Hotel, Million Dollar Pier, Blenheim Hotel, Brighton Hotel, 1239 Boardwalk, Strand Hotel, Virginia Ave., St. Charles Hotel and Royal Palace Hotel.

TELEPHONES ON THE PIER.

A Bell telephone will be placed between each two exhibit booths on the pier. These are available for free local service for exhibitors. Long-distance calls can also be made from these stations.

GOLF.

The Country Club of Atlantic City extends the privilege of its club house to all members and guests during their stay, and admission to the grounds will be by official badge. It also extends the privilege of the links for a charge of \$1.00 per day, and tickets may be obtained from the steward at the club. The club is located at Northfield and may be reached at half-hour intervals by the Shore Fast Line Electric, leaving from the Boardwalk and Virginia avenue, also by the Atlantic City & Suburban Traction Company, leaving from Florida avenue and the Boardwalk. The running time is about 20 minutes.

U. S. MAIL.

Mail, addressed care of Secretary's Office, Million Dollar Pier, will be taken care of and distributed when called for at that office.

RAILWAY SUPPLYMEN'S MEETING.

The annual meeting of the Railway Supply Manufacturers' Association will be held in the convention hall on Young's New Million Dollar Pier, Saturday, June 15, at 10.30 a. m. District meetings for the election of the executive committee members will be held on Friday, June 14, between 10 a. m. and 12 noon, in the office of the executive committee, which adjoins the enrollment booth at the pier entrance.

ENROLLMENT.

The registration booth at the entrance to the pier was opened yesterday morning. This morning it will be opened at 8.30, and it is urged members of the association register as early as possible.

Members of the Master Car Builders' Association are required to pay \$1.00 for each badge for themselves or for their guests. Members of the Master Mechanics' Association will be registered this week only as guests of the M. C. B. Association, and will be required to pay \$1.00 for each badge.

The M. M. registration begins at 7.30 P. M. Saturday, and from this time on no charge will be made for M. M. badges.

To facilitate the registration of members, ladies and guests of the Railway Supply Manufacturers' Association, members will first go to the treasurer, who is at one end of the enrollment booth, and receive a card showing that dues and fees for additional badges have been paid. If not already paid, the treasurer will receive payment at this time. The member will then fill out the card and present it at the enrollment booth, where the card will serve as an order on the enrollment committee for the badge or badges.

THE BALL GAME.

The annual ball game will take place at the Inlet Park ball grounds on Saturday afternoon. The captain of the Western team is Harry S. Hammond, Pressed Steel Car Company, Pittsburgh, Pa., and the captain of the Eastern team is T. P. O'Brian, O. M. Edwards Company, New York City. The managers in charge of the game are G. W. Wildin, New York, New Haven & Hartford, New Haven, Conn.,

and F. M. Nellis, Westinghouse Air Brake Company, Boston, Mass.

The rules governing eligibility for players are the same as last year. They are as follows:

(1) Teams to be composed of 12 men in uniforms—8 railway supply men, 4 railway men.

(2) Supply men must be in the sales department, or those who call on railways or car companies and solicit business.

(3) No one who is in the shop end alone shall be allowed to play.

(4) No one to be allowed to play who comes to Atlantic City for the base ball game alone. He must be in attendance as a representative of a supply company and registered as such.

(5) Railway men to play must be members of either the M. M. or M. C. B. Association. Men working in the shops cannot play.

(6) Members' names and occupations, firm and railway names included, to be submitted to Philip J. Mitchell, chairman of the entertainment committee.

(7) If for any reason a change in team is necessary, names shall be submitted to and passed upon by the managers, Messrs. Wildin and Nellis, as well as to Mr. Mitchell.

(8) No player shall be eligible who has not been employed as salesman for at least one year by a railway supply company, or who has not been a member of the M. M. or M. C. B. Association for at least one year.

(9) No variation from these rules will be permitted.

(10) Pittsburgh, Pa., will be in the western territory, and Buffalo, N. Y., in the eastern.

THE FRIDAY EVENING ENTERTAINMENT.

The musicale, which is to be given on the pier on Friday evening will begin at 9.00 o'clock. It will last about an hour, and, judging from the program which the committee has provided, it will prove a decidedly attractive means of getting people together at the pier.

THE DANCES.

The informal dance to be held to-night at the Marlborough-Blenheim and the dance at the pier to-morrow night are intended to be really informal. That is, evening dress is by no means obligatory, and it is expected that those who attend will wear evening or day clothes according to which is most convenient.

TAXICAB AND GARAGE SERVICE.

The C. J. Sedlag Company, with main office at Tennessee and Atlantic avenues, has contracted to provide taxicabs for members and guests wearing official badges, at the following rates: For each person hauled, within the city limits, 25 cents per person; hourly rate, for one to five people, \$3 per hour. Taxicabs are to be available at the Marlborough-Blenheim hotel, Million Dollar Pier and at the stations of the taxicab company. Garage service for private machines will be provided by this company at the following rates: 75 cents per day without service; \$1.50 per day with service; \$7 per week with service.

INVITATION TO ARMY AND NAVY.

The Railway Supply Manufacturers' Association has extended a special invitation to the Secretary of War and the Secretary of Navy inviting them, or any others under their jurisdiction, to attend and inspect this year's exhibit. It is not learned yet whether any from either department will be present.

A RAILWAY PLANK FOR BOTH POLITICAL PLATFORMS.

The conventions to be held in Atlantic City this week and next are not the only important conventions that are scheduled for early dates, and the Railway Business Association is moving to get the two great political parties to insert in the platforms that will be adopted railway planks that will tend to cause a less restrictive policy of railway regulation and thereby stimulate the development of transportation facilities. The association has issued bulletin No. 11 entitled, "Duty of the Political Parties to the Shippers," and is asking shippers to sign the following petition and forward it to the office of the association at 2 Rector street, New York City:

"The undersigned shippers and receivers of freight, in our own interest, respectfully urge the national conventions of the political parties to declare a policy toward railways which, while emphasizing the necessity for their regulation to prevent discrimination and excessive charges; to safeguard life and to promote the convenience and comfort of the public, will:

"Give careful heed to the promotion of their prosperity and growth.

"Ascertain in considering enactments compelling expenditures that they possess the resources to meet such outlays without injury to efficient service;

"Provide that in all adjustments of rates ample revenue shall be insured them to meet existing obligations and to attract capital for necessary improvements and extensions."

Shippers attending the conventions—and there are many railway supply men attending who are very large shippers—may sign the petition by calling at the RAILWAY AGE GAZETTE booth. The wording of the petition indicates the nature of the planks that the association is trying to get adopted.

The association in its bulletin presents the following argument for the policy that it advocates:

"The national party conventions soon to meet will adopt in their platforms what they regard as the most important policies of government for the well-being of the country. Such policies will be designed to comprehend the whole range of the public needs and to insure prosperity and progress to the whole people. To these policies each party will pledge itself, and will be expected, in event of success at the polls in November, to shape legislation and administration during the next four years in accordance therewith.

"Among the subjects hitherto considered in the party platforms has been that of railway regulation. This subject will, without doubt, be dealt with again in 1912. It is the purpose of this bulletin to direct the attention of the parties to a phase of that subject involving momentous consequences to the national welfare, twice urged upon congress by the Interstate Commerce Commission, and never yet acted upon—namely, the inadequate supply of railway facilities and the difficulty of dealing with it under regulation as now established. The difficulty lies in the absence of any connection between rate regulation, railway revenues and the demands made upon the railways for service and outlays.

Consumers as well as shippers, farmers as well as manufacturers and their employees, will suffer if facilities are not developed in advance of requirements. Traffic has grown faster than facilities. These cannot be increased by act of legislature or by decrees of courts or commissions.

The political parties would probably be reluctant and, in our judgment, would be unwise in attempting to define within a platform declaration a specific solution. The question is one for thorough investigation and interchange of views.

In the way deemed appropriate to each, the government fosters water transportation, agriculture, forestry, mining, manufactures and foreign trade. The railways need a systematic consideration of their revenues as bearing on their ability to obtain capital and provide track, locomotives and cars. The time has come when rail transportation should be recog-

nized as an industry which the government should encourage as well as regulate.

In the past emphasis has been laid by the parties upon the prevention and discriminations and excessive charges by the railways and the promotion of the public safety. In reiterating these policies, as they should, the parties should place alongside them the promotion of railway development and of carrying capacity as a policy of equal importance and of vital necessity.

The Interstate Commerce Commission said in 1906:

"The inability of shippers to procure cars for the movement of their traffic is the subject of numerous and grievous complaints, which come to the commission from all parts of the country. In some cases it is simply a lack of cars, in others insufficient tracks and motive power, in still others wholly inadequate freight yards and terminal facilities."

In the same report the commission said:

"Broadly speaking, the regulating power of the congress has not been exercised to control the physical operation of interstate railroads—aside from the safety appliance requirements—either as respects the movement of trains or the supply of equipment. To what extent the delegation of authority to the commission to deal with a situation of this kind would be likely to prove of practical value is a question of great difficulty. The commission is not prepared to recommend a definite scheme of legislative relief; but we are amply warranted in bringing the matter to the attention of the congress in this general way and to ask that it receive early and careful consideration."

In 1907 the commission said:

"The general question of the provision of adequate transportation facilities unquestionably merits serious consideration by the congress. The ability of the carriers to transport traffic measures the profitable production of this vast country, with its 90,000,000 of people, abundant capital and practically unlimited resources. Manifestly, it is an economic waste for the farm, the mine or the factory to put labor and capital into the production of commodities which cannot be transported to market with reasonable dispatch. If the present output cannot, in many instances, be transported except after ruinous delays, it is not reasonable to presume that capital will readily seek investment in new undertakings."

The cry for relief to the shippers is as insistent now as in 1906. The danger of congestion of traffic through the inability of the railways to furnish the requisite facilities is as great a menace, probably greater, to the growth and prosperity of our country in the year 1912 than ever before.

It should be frankly stated that the condition of railway finances which was the cause of inadequate growth in facilities in 1906 was not the result of the attitude of the Interstate Commerce Commission in regulating rates. The effective regulation of interstate rates was not authorized until after the car shortage of 1906 and 1907, discussed by the commission in its reports for those years. The largest factor up to that time contributing to the situation as it then existed was the action of the railways themselves in the period of disastrous competition.

The commission since 1910 has been clothed, not only with authority to reduce rates, either upon their own motion or upon complaint, but to suspend proposed advances when tariffs proposing advanced rates are filed with the commission.

A very large body of rates aggregating many millions of revenue have been reduced by order of the commission, many proposed advances have been denied, and the result has been a weakening of revenue supplemental to the impairment which because of increasing costs and rigid rates would have taken place without such decrees. The denial in 1911 of the general advances asked for, although involving comparatively small amounts and on some accounts not disadvantageous to the roads, served to intensify feeling among investors that the regulatory apparatus of the country was operating in the

direction of skimping railway revenues, and the course of miscellaneous decisions since that time has added to this conviction.

The opposite conviction, namely, that the regulatory apparatus will operate in the direction of permitting adequate railway revenues, can only be carried home to investors by a definite and formal declaration that this is to be the policy of the government and systematically enforced.

Most of the rate cases brought before the commission at present do not have as their primary purpose the reduction of rates, but are controversies between communities, individuals or commodities as to the relation of one rate to another.

What is here discussed has no bearing whatever on any general advance in rates. So far as the Railway Business Association is informed no such advance is under consideration. If every schedule in the United States were to be raised to-morrow this would in no way touch the question which is here offered for public discussion. What is urged is that the method of regulating rates should be sufficiently flexible to conform to the needs of industry and to the requirements of the carriers and to insure their fullest efficiency.

The Interstate Commerce Commission has the power of influencing, through rate regulation, what net revenue carriers, or any of them, shall earn. There can be no doubt that in the exercise of this power the commission will be strongly and properly influenced by an evidence of public approval of a policy which shall permit the railroads to accumulate resources and to anticipate the growth of traffic. This approval can best be demonstrated to the commission by a platform declaration by the political parties in convention assembled.

Where discriminations between communities, commodities or individuals are alleged to exist and the rates in themselves are not found to be unreasonable, an opportunity should be offered to the carriers by suggestion on the part of the commission permitting readjustment without compelling a reduction in the aggregate earnings.

What was the "great difficulty" which confronted the Interstate Commerce Commission in 1906 in formulating "a definite scheme of legislative relief" for car shortage and other inadequacies of railway facilities? This great difficulty, although not defined, must have been the fact that every additional car or locomotive, every mile of additional track, every enlargement of terminals provided by the railways must be paid for by them out of money that they could either earn or borrow. Whatever the commission might ascertain by investigation to be the absolute requirement of the shippers in augmented transportation facilities; however many hundreds of millions of dollars the commission might decree must be spent by the railways properly to serve the shippers, their ascertainment and resultant order would be futile, if the railways did not possess the money wherewith to make the investment, or could not persuade investors seeking safe and profitable investment to lend them the money upon such security as they had to offer. They understood, of course, that no government appropriation goes with an edict compelling railway expenditure.

The present chairman of the Interstate Commerce Commission, the Hon. Charles A. Prouty, thoroughly understands this, as is shown by the following extract from an address delivered by him in 1909 at Yale University:

"While we can provide by legislation the sort of cars which a railroad shall use and the rates which it shall impose, we cannot by legislation force one single dollar of private capital into railway investment against its will."

It is clearly recognized by shippers, railway managers and other high authorities that there is acute urgency as well as permanent necessity for dealing vigorously with the subject. Business bodies in resolutions and journals and magazines in editorials are directing attention to the danger and calling for a solution.

The railway managers are vividly alive to their unprepared-

ness, but they are confronted by a situation of great perplexity. The difficulty is financial and presents itself in two phases.

First, investors are reluctant to take securities on terms which the managers deem prudent. This impairment of borrowing credit is the result of several conditions. The most important of these is the low level of a great body of rates brought about during the period of extreme completion. Then in the face of this influence tending to keep revenues depressed, expenses have increased through a continuous upward movement in wages, a large augmentation in taxes, enormous additions to fixed charges for investments in non-revenue producing improvements made under legislative compulsion or pressure of communities in the direction of safety of the public and of employees and the comfort of passengers, and a substantial increase in operating expenses due to compulsory shortening of hours and labor and other causes incident to regulation. The security, moreover, which railroads are now able to offer is no longer to so great an extent as formerly unincumbered property. New money must be raised by issue of junior liens or of stock. Purchasers of junior liens require a higher rate to compensate for the less solid security, while purchasers of stock scrutinize the surplus in order to determine whether an addition to the outstanding stock will be likely to result in a decrease in the rate of dividend.

Second, the rate now demanded by investors involves a larger obligation dollar for dollar in the form of returns on the new securities sold. The railway managers face the question whether or not they can pay the interest which they would have to promise or the dividends which they would practically have to predict. It is upon their personal assurance as administrators that securities will be taken if at all. A grave doubt necessarily disturbs their minds as to future ability to pay such return. No other condition of mind is possible to them since they have no way of knowing what rates they will be permitted to charge and hence what income they will have, and no way of forecasting what draughts will be made upon their resources by Congressional and state enactments.

"OU SONT LES FLEURS D'ANTAN?"

[The following is what the one-time poet laureate of the mechanical conventions anticipated would be the result of the revision and curtailment of the entertainment features of the conventions. Whether he is a prophet as well as poet only time will tell.—Editor.]

Atlantic City days have come, the hottest of the year,
With Panamas and negligees, of talk, and baths and beer;
Sculped in the sand along the beach the "Lion of Lucerne"
Basks in the glare of southern sun and frizzles to a turn;
The "automobile party," the bust of one T. R.,
And painted adlets scattered round soon tell us where we are.

And Old Vienna's classic shades (but shades is not the word)
And "classic" should be "classy" (at least that's what I've heard);

The "closing sales" along the walk, that, lo! these many years
Have found no end of goods nor dearth of sacrificial tears;
These and the music—save the name!—that dins on every side,

Enforce the thought that Boardwalk life is at its highest tide.

And now M. M.'s and M. C. B.'s are strolling on the walk,
When not in Young's Greek Temple for annual fest of talk;
And salesman—order-taker—and industrial chevalier
Have taken up their annual stand, the Million Dollar Pier.
And roller chairs of one-coon power-roll softly on the boards,

While Boniface and Bacchus' squires rake in their annual hoards.

But where the "buds," the tender "buds," that always used to come

To bloom in glory at the shore though dad was "on the bum?"

Away, like birds of last year's nest, the snows of yester year; (Poor Daddy pays his own hotel, his fare, and—yes—his beer);

Yet may we ask in musing mood, as beach and walk we scan, "Where are the flowers of yester year? Où sont les fleurs d'antan?"

And Daddy buys his badges, too, and pungles up the shot For roller chairs, unless, mayhap, he'd "rather walk than not;"

He gets along without a band, a ball each week, a show; And if he wants to take a bath, signs tell him where to go. Bath tickets are not floating round—he knows it isn't right, He'd better follow grandpa's plan and wait till "Sad'day night."

For Papa's conscience took a whirl, and though he likes to roam,

He's rather glad to foot the bills and be man at home; Conventions do not last alway, and when he buys supplies He'd rather feel his hands unbound, no bandage on his eyes. The other fellow 'll have to cut:—"Why, Mr. S. M. P., Don't you recall that time last June you took a bath on me?"

And yet, I can't imagine it, it's been so—well, not so— Since entertainments came the rage so many years ago; I'm almost glad I am not there, I shouldn't feel at home, And might not have the mind to do as Romans do in Rome. And so I'll end this mingled wail and muse, as I began:—"Where are the flowers of yester year? Où sont les fleurs d'antan?"

— F. W. LANE.

The exact situation of the railway from Kiukiang to Nanchang, the capital of Kiangsi province, China, is doubtful. The line was surveyed in 1905, but actual construction work did not commence until 1908. In April, 1910, the Chinese customs commissioner reported that the chief engineer had declared the first section of 32 miles so near completion that there was no reason why it should not have been opened that summer. At that time all the grading was finished, track had been laid for 6 miles, and most of the bridges were completed. However, financial troubles, which have interfered with the progress of the work from the beginning, set in during the summer and the work was greatly retarded. The rails and fittings for this road were manufactured by the Hanyang Iron & Steel Works at Hankow. The bridge steel, cars, locomotives, and considerable other material are from the United States. The staff, until very recently at least, was entirely Japanese. The line passes through exceptionally easy country for railway building, but involves the construction of several notable bridges, among them being a seven-span bridge about three and a half miles from Kiukiang and an 800 ft. truss bridge 50 miles from Kiukiang. The road taps an exceptionally rich country, from which great quantities of tea and other agricultural products are exported. Between comparatively low cost and prospective unusual earning power, the immediate financial success of the enterprise is expected, but the difficulty of securing the necessary capital from native sources, is likely to embarrass the management for some time.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.

There has been much speculation as to the usefulness of the officers and executive committee of the Railway Supply Manufacturers' Association, now that they have been interstate-commerce-commissioned; but one has only to walk from the pier entrance to the Greek Temple to learn that they have hardly had time to get into very much mischief.

And as to the other features of the convention, those who know the able chairman of the respective committees in charge of the details of the supply-men's end, know that nothing has been left undone that will make for the comfort and pleasure of the members and guests of the three associations.

On the page opposite appear likenesses of eight members of the executive committee. Two faces are missing—Lanahan and Reilly. Unfortunately some folks still have false notions about modesty when it comes to facing a camera; hence the necessity for an apology by the editor.

The president of the association is B. E. D. Stafford, general manager of the Flannery Bolt Company, Pittsburgh, Pa. "Staff" is one of the best fellows in the world and a methodically hard worker. To him, more than to any one other man, does the association owe a debt of gratitude for the success of the exhibit section. In 1910, as chairman of the exhibit committee, he gave the subject much time and attention; and last year as vice-president of the association, and again this year as its president, the respective chairmen of the exhibit committee

have been helped materially by Mr. Stafford's experience and keen perception. Mr. Stafford is a practical shop man—he can lay out a shop and run the machinery; but he appears at his best as an expert on staybolts and staybolt iron. For the last 12 years he has devoted most of his time and energy to that business; and nearly eight of those 12 years have been spent in perfecting and selling the Tate bolt.

Samuel G. Allen, vice-president, was born at Warren, Pa., in 1870, and graduated in law from Pennsylvania State



B. E. D. STAFFORD,
President.



SAMUEL G. ALLEN,
Vice-President.

College in 1891. He practiced from that time until May, 1900, when he was made general manager of the Franklin Air Compressor Company. One year later that concern was sold to the Chicago Pneumatic Tool Company and Mr. Allen and J. S. Coffin organized the Franklin Railway Supply Company, Franklin, Pa., with Mr. Coffin as president and Mr. Allen as vice-president,



E. L. ADREON.



ALBERT C. ASHTON.



W. W. ROSSER.



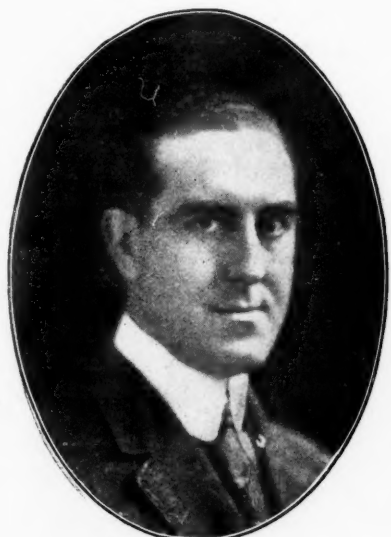
CHARLES P. STORRS,
Chairman, Finance Committee.



J. WILL JOHNSON,
Chairman, Exhibit Committee.



E. H. WALKER,
Chairman, Badge Committee.



LUCIAN C. BROWN.



J. R. BLAKESLEE.



GEORGE L. MORTON.

Members of the Executive Committee of the Railway Supply Manufacturers' Association.

which positions both now hold. In 1909 the company moved to New York. Mr. Allen is also secretary and treasurer of the American Arch Company, treasurer of the Locomotive Superheater Company and vice-president of the General Equipment Company, all of New York City, and secretary of the executive committee of the American Brake Shoe & Foundry Company of Mahwah, N. J.

The biographies of the treasurer, Herbert I. Lord, and secretary, John D. Conway, appeared in *The Daily*, of June 14, 1911, page 1344.

The seven geographical districts are represented on the executive committees as follows:



HERBERT I. LORD,
Treasurer.

and George N. Riley, National Tube Company, Pittsburgh, Pa. Fourth District (Ohio, Indiana, Michigan), two members—H. I. Lord, Detroit Lubricator Company, Detroit, Mich., and J. R. Blakeslee, Ajax Manufacturing Company, Cleveland, Ohio. Fifth District (Illinois, Wisconsin, Iowa and Minnesota), two members—W. W. Rosser, The T. H. Symington Company, Chicago, and J. Will Johnson, Pyle-National Electric Headlight Company, Chicago. Sixth District (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi,

(New England states and Canada), one member—Albert C. Ashton, Ashton Valve Company, Boston, Mass. Second District (New York and New Jersey), three members—Charles P. Storrs, Storrs Mica Company, Owego, N. Y.; E. H. Walker, Standard Coupler Company, New York and Lucien C. Brown, United Equipment Company, New York. Third District (Pennsylvania) two members—Frank J. Lanahan, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.,

Kentucky and Tennessee), one member—George L. Morton, Galena-Signal Oil Company, Atlanta, Ga. Seventh District (states west of the Mississippi River including Louisiana, but excepting Iowa and Minnesota), one member—E. L. Adreon, American Brake Company, St. Louis, Mo.

With each annual meeting four members of the executive committee retire and their successors are elected for three-year terms. Messrs. Adreon, Ashton, Lord and Storrs will retire at the close of this convention.

B. E. D. Stafford, president, and Samuel G. Allen, vice-president, are members ex-officio.

The several committees in charge of the details of the plans of the executive committee are made up as follows:

Entertainment Committee.

Philip J. Mitchell, (chairman), Philip S. Justice & Company, Philadelphia, Pa.; Ross F. Hayes, Curtain Supply Company, New York; W. J. Walsh, Galena-Signal Oil Company, Chicago; H. E. Oesterreich, Wendall & McDuffie Company, New York; Leonard J. Hibbard, L. J. Hibbard & Company, New York; J. C. Younglove, H. W. Johns-Manville Company, Chicago; Thomas Farmer, Jr., Consolidated Car Heating Company, New York; E. S. Toothe, Nathan Manufacturing Company, New York; Charles P. Williams, Chicago Railway Equipment Company, New York; C. A. Dunkelberg, S. F. Bowser & Company, Ft. Wayne, Ind.; Edwin H. Janes, Talmage Manufacturing Company, Cleveland, Ohio; H. A. Nealley, Joseph Dixon Crucible Company, Boston, Mass.; George R. Carr, Dearborn Drug & Chemical Company, Chicago; Herbert Green, Burton W. Mudge & Company, Chicago; C. W. Wardell, Welsbach Company, Gloucester, N. J.; L. B. Sherman, RAILWAY AGE GAZETTE, Chicago; William S. Furry, Ohio Injector Company, Chicago; Fred M. Nellis, Westinghouse Air Brake Company, Boston, Mass.; J. P. Landreth, Garlock Packing Company, Chicago; Harry S. Hammond, Pressed Steel Car Company, Pittsburgh, Pa.; E. F. Chaffee, O. M. Edwards Company, Syracuse, N. Y.; J. D. McClintock, Wm. Sellers & Company, Inc., Philadelphia, Pa.; T. W. Illingworth, Midvale Steel Company, New York; W. K. Krepps,

Crucible Steel Company of America, Pittsburgh, Pa., and Roger J. Faure, Commercial Acetylene Company, New York.

The sub-committees of the entertainment committee are:

Door.—In charge of entrance at all entertainments. Messrs. Williams (chairman), Green, Furry, Janes and McClintock.

M. C. B. Social Gathering and Informal Dance.—Wednesday evening, June 12, at the Marlborough-Blenheim. Messrs. Walsh (chairman), Farmer, Williams, Younglove, Furry, Green and Janes.

M. C. B. Dance.—On pier, Thursday evening, June 13, Messrs. Younglove (chairman), Hayes, Hibbard, Dunkelberg, Wardell, Sherman, Nellis, Illingworth and Krepps.

Musical Evening.—On pier, Friday, June 14. Messrs. Hibbard (chairman), Oesterreich, Toothe, Farmer, Sherman and Illingworth.

Base Ball.—Saturday afternoon, June 15. Messrs. George W. Wildin and F. M. Nellis (managers), and Messrs. Hibbard, Hammond, Carr, Landreth and Chaffee.

M. M. Social Gathering and Informal Dance.—Monday evening, June 17, at the Marlborough-Blenheim. Messrs. Dunkelberg (chairman), Nellis, Wardell, Hayes, Carr, Sherman, Landreth and McClintock.

M. M. Dance.—On pier, Tuesday evening, June 18. Messrs. Farmer, Jr. (chairman), Toothe, Walsh, Oesterreich, Hammond, Nealley, Chaffee and Faure.

Introduction Committee.—To promote sociability at all dances. Messrs. Carr (chairman), Dunkelberg, Sherman, Nealley, Toothe, Hayes and Krepps.

Ushers' Committee.—In charge of seating of guests and distribution of programmes at entertainments and dances. Messrs.



PHILIP J. MITCHELL,
Chairman, Entertainment Committee.

Wardell (chairman), Younglove, Walsh, Oesterreich, Wardell, Nealley, Chaffee and Faure.

Enrollment Committee.

O. F. Ostby (chairman), Commercial Acetylene Company, New York; H. B. Darlington, Union Spring & Mfg. Company, Pittsburgh, Pa.; C. S. Woodruff, Lowe Brothers Company, Chicago; W. S. Hammond, Jr., Consolidated Car Heating Com-



OSCAR F. OSTBY,
Chairman, Enrollment Committee.

pany, Chicago; M. S. Simpson, Pressed Steel Car Company Pittsburgh, Pa.; C. B. Yardley, Jr., Jenkins Brothers, New York; E. Bjerregaard, Official Railway Guide, New York; H. G. Newman, Johns-Manville Company, New York; J. G. Mowry, Patton Paint Company, New York; H. J. Jefferson, United & Globe Rubber Mfg. Company, Pittsburgh, Pa.; F. E. Beal, Magnus Metal Company, Atlanta, Ga.; Simon J. Dolan, American Car & Foundry Company, St. Louis, Mo.; Harold A. Brown, Pocket List of Railroad Officials, New York; R. T. Hodgkins, Yale & Towne Mfg. Company, New York and J. A. Warful, Oxweld Acetylene Company, Pittsburgh, Pa.

Finance Committee.

Charles P. Storrs (chairman), Storrs Mica Company, Owego, N. Y.; Albert C. Ashton, Ashton Valve Company, Boston, Mass., and George N. Riley, National Tube Company, Pittsburgh, Pa.

Exhibit Committee.

J. Will Johnson (chairman), Pyle National Electric Headlight Company, Chicago; E. H. Walker, Standard Coupler Company, New York; J. R. Blakeslee, Ajax Manufacturing Company, Cleveland, Ohio, and Frank J. Lanahan, Fort Pitt Malleable Iron Company, Pittsburgh, Pa.

Badge Committee.

E. H. Walker (chairman), Standard Coupler Company, New York; Samuel G. Allen, Franklin Railway Supply Company, New York, and L. C. Brown, United Equipment Company, New York.



The result of the discrimination of the badge committee is shown herewith. The badges for the ordinary supplymen are royal blue; while those for the ladies who accompany them are white.

Light-blue badges mean that the ladies who wear them are guests of members of the M. C. B. and M. M. associations. The special complimentary badges for men are red, and those for the ladies, yellow.

The holders of licenses for dealing in salt in China have decided, with government permission, to build a railway from Icheng, near the Yangtze river, to Taichow, with a branch between Icheng and the salt depot at Shiherwei, on the Yangtze river, all in the province of Kiangsu. This line will cross the Grand Canal at Kwachow and pass up the eastern bank of the canal as far as Yangchow, a good-sized city, whence it will go to Taichow via Hsiennumiao.

THE CHILLED IRON CAR WHEEL.

CHICAGO, May 31, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Reference to the Interstate Commerce Commission report for the year ended June 30, 1910, will show that there were 2,133,531 freight cars in service, and classification of this equipment as to capacities shows:

	Per cent.
244,013 freight cars 10,000 lbs. to 50,000 lbs. capacity (inc.)	11.5
865,495 freight cars 60,000 lbs. to 70,000 lbs. capacity (inc.)	40.5
641,022 freight cars 80,000 lbs. to 90,000 lbs. capacity (inc.)	30.1
382,930 freight cars 100,000 lbs. to 110,000 lbs. capacity (inc.)	17.9
71 freight cars over 110,000 lbs. capacity	...
Total, 2,133,531	100.0

The character of the equipment was as follows:

	Per cent.
966,577 box cars	45.3
153,919 flat cars	7.2
77,584 stock cars	3.6
818,689 coal cars	38.3
7,434 tank cars	.4
30,918 refrigerator cars	1.5
78,410 other cars	3.7
Total, 2,133,531	100.0

As it takes eight wheels to equip a car, it is evident that there were 17,068,248 wheels in service under freight equipment alone. Ninety-five per cent. of the wheels used under freight equipment are chilled iron wheels. Therefore, there are over 16,000,000 chilled iron car wheels in service in the United States. This figure does not include hundreds of thousands of chilled iron wheels which are used under passenger cars, locomotive tenders and on private car lines. It will thus be seen that the commerce of the country is practically dependent upon the chilled iron car wheel. The chilled iron car wheel may be defined to be a body of metal scientifically moulded in which the iron structure in every part of the wheel is admirably suited to its purpose, viz., hard tread, soft plates, soft hub.

The tread or running surface is as hard as the hardest steel, and because of this hardness it becomes polished in service, and this reduces the friction between the wheel and the rail. The plates are soft, thus insuring the necessary structure to carry heavy loads and resist temperature stresses due to brake application. The hub is soft, so that the wheel may be easily machined for axle fit. There is no known metal that possesses the graded hardness of structure of the chilled iron car wheel.

The Master Car Builders' Association specifies three classes of wheels for cars of different capacities, as follows: Six hundred and twenty-five lb. wheel for 60,000 lb. cars; 675 lb. wheel for 80,000 lb. cars, and 725 lb. wheel for 100,000 lb. cars. As the capacities of the cars have increased, the wheels have been increased in weight, but not in proportion to the increase in car capacity and other parts of the car; for instance, the 625 lb. wheel carries a 60,000 lb. car and the 725 lb. wheel carries a 100,000 lb. car; the increase in car capacity has been 65% per cent., and in the weight of the wheel 16 per cent. The 550 lb. axle carries a 60,000 lb. car and the 870 lb. axle carries a 100,000 lb. car; the increase in the weight of the axle is 58 per cent. The body of the car weighs 23,000 lbs. for a 60,000 lb. car, and 32,900 lbs. for a 100,000 lb. car; the increase in the car body being 43 per cent.

It will be noted that the capacity of the car has been increased 65% per cent. While the weight of the axle has increased 58 per cent., that of the car body 43 per cent., and that of the car wheel only 16 per cent., proving that the weight of the wheel has not increased in the same ratio that increases have been made in the other parts of the car.

The tendency of the railways is to increase the capacity of the car beyond 100,000 lbs., and while axles have been designed for 140,000 lb. cars, no wheel has been specified by the Master Car Builders' Association for this service. Still, the chilled iron car wheel makers are placing in service wheels to carry this load, and even loads of greater capacities. Its use under tenders of 10,000 gal. capacity and ore cars of 150,000 lb. capac-

ity proves conclusively that there is scarcely a limitation to the chilled iron wheel, and it is standard because of its safety, economy and adaptability.

As long as cars increase in capacity, all parts of the wheel should be strengthened proportionately, and in the process of evolution, from cars of 10,000 lb. to cars of 100,000 lb. capacity, metal has been added to all parts of the wheel with the exception of the flange, because of the recognized limits of track clearance.

From the earliest period of railroading the frog and guard rail clearance has been a minimum of $1\frac{3}{4}$ in., although many roads throughout the country use a minimum of $1\frac{7}{8}$ in. and 2 in. clearance. The weight of the wheel has increased from 525 lbs. to 725 lbs., of the rail from 50 lbs. to 100 lbs., and practically the same flange is used today as was used under cars of 20,000 lb. capacity.

The important service that the chilled iron wheel is rendering is performed at a minimum cost. A chilled iron car wheel is sold in the market for an approximate differential of \$3.50. The net cost to the railway is the difference between the selling price and the old wheel which is taken as part payment for the new wheel, amounting to approximately \$3.50 per wheel. These wheels are guaranteed for a certain period, and in case the wheel does not give the service for which it is guaranteed, the loss comes on the manufacturer.

Under some conditions of service a 625 lb. wheel is guaranteed for six years minimum service, a 675 lb. for five years, and a 725 lb. for four years.

The average life of the various classes of wheels will approximate as follows: Twelve years for a 625 lb. ordinary freight car wheel, 10 years for a 675 lb. wheel, and 8 years for a 725 lb. wheel.

Assuming that a 625 lb. wheel only fulfills its guarantee, the cost per wheel per year, based upon the \$3.50 differential, is 58 $\frac{1}{2}$ cents, and the cost of 8 wheels per car is \$4.66 per year. If this expense is based on the average life of 12 years for a 625 lb. wheel, the cost per car per day would be approximately \$2.33.

It is stated that about 85 per cent. of the repairs to freight cars are due to shocks consequent on coupling, etc., thus damaging bolsters, draft-gears and other parts of the car. Analysis of the cost of the repairs of freight cars will show that the wheel expense is insignificant compared to the repairs for other parts of the car.

If any other wheel is substituted for the standard chilled iron wheel, it must be demonstrated by competitive tests: first, that it is more economical per ton-mile; second, that it is better adapted to the service, for which it is intended, and third, that it must be safer.

Then it must be borne in mind that an added cost of \$10 per wheel would involve an expenditure of \$80 per car, and the interest on this investment at 5 per cent. would be \$4 per car per year, which is more than the renewal cost of the standard chilled iron car wheel, and on this basis it would amount ultimately to an additional investment to the railways of \$160,000,000 for freight car wheels alone.

The Association of Manufacturers of Chilled Car Wheels represents a capacity of 20,000 chilled iron car wheels per day. Its members are spending time and money investigating the important service conditions, and they are paying the most careful attention to improved foundry methods, selection of material and physical tests in order to bring their product up to the very highest standard. Statistics show that with the rapid increase in car load and capacity there has been a decrease in wheel failures. Years of experience have proved that the chilled iron car wheel will meet any condition of service no matter what load is imposed on it, and the railways receive a greater return per unit of investment from the chilled iron car wheel than from any other car wheel known.

ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS.

By George W. Lyndon.

M. C. B. REGISTRATION.

Averill, E. A., American Engineer, Traymore.
 Barnum, Morgan K., Ill. Cent., Dennis.
 Baron, Jacob, Kentucky & Ind. Terminal, Young's.
 Borrowdale, J. M., Ill. Cent., Brighton.
 Boutet, H., all lines Cincinnati, Chalfonte.
 Boyer, Chas. E., Penna. R. R., Runnymede.
 Brazier, F. W., N. Y. C. & H. R. R. R., Marlborough-Blenheim.
 Burnett, R. W., Canadian Pacific Ry., Marlborough-Blenheim.
 Bussing, G. H., Buffalo & Susquehanna, New Orleans Great Northern, Haddon Hall.
 Calkins, A. E., New York Central, Young's.
 Caton, S. W., Western Maryland R. R., Monticello.
 Chamberlain, Eugene, New York Central Lines, Marlborough-Blenheim.
 Chamberlain, J. T., Young's.
 Chandler, R. D., N. Y. C. & H. R. R., Lexington.
 Coleman, J., Grand Trunk Ry., Dennis.
 Conniiff, P., B. & O. R. R., Lexington.
 Copany, Alfred, Grand Trunk Ry., Young's.
 Corinth, A. B., A. C. L. R. R. Co., Shelburne.
 Covert, M. F., Swift Car Lines, Traymore.
 Crawford, D. F., Penna. Lines, Brighton.
 Crone, S. A., Dennis.
 Cyr, J. W., C. B. & Q. Lines East, Traymore.
 Darrach, E. H., Inter-State Car Co., Young's.
 Dawson, L. L., Ft. Worth & Denv. City Ry., Brighton.
 DeVoy, J. F., Chicago, Milwaukee & St. Paul Ry., Shelburne.
 Dooley, W. H., Queen & Crescent, Dennis.
 Downing, I. S., L. S. & M. S. Ry., Traymore.
 Dunham, W. E., Chicago & Northwestern Ry., Young's.
 Dunlap, W. H., Louisville & Nashville R. R., Westminster.
 Everett, Ira, L. V. D. R., Dennis.
 Finley, J. B., South Pacific of Mexico & Sonori Ry., Chelsea.
 Flory, B. P., N. Y., Ontario & Western Ry., Marlborough-Blenheim.
 Fogg, J. W., B. & O., Chgo. Ter. R. R., Chalfonte.
 Forsyth, Wm., Ry. Age & Gazette, Marlborough-Blenheim.
 Gaines, F. F., Central of Georgia Ry., Dennis.
 Gainey, J., Queen & Crescent.
 Giles, C. F., L. & N. R. R. Co., Chalfonte.
 Gommerman, W. K., B. & O.
 Gorrell, W. T., Phila. & Reading Ry., Monticello.
 Gossett, C. E., Minneapolis & St. Louis R. R., Dennis.
 Gould, Jos. E., Norfolk Southern Ry., Dennis.
 Green, Herbert, Brighton.
 Grieves, E. W., Galena Oil Co., Marlborough-Blenheim.
 Hedgcock, E. S., L. & N. R. R. Co., Chalfonte.
 Hendry, John, Grand Trunk Ry. System, Traymore.
 Hennessey, J. J., C. M. & T. P. Ry., Chalfonte.
 Hills, H. S., Louisville & Atlantic R. R., 11 Mt. Vernon Ave.
 Hodgson, John L., Grand Trunk Ry., Traymore.
 Hogsett, J. W., Am. Line Fort Worth & Dallas, Texas, Lexington.
 Johnson, J. O., Southern Ry., Sterling.
 Joughins, G. R., Intercolonial Ry., Chalfonte.
 Kalbaugh, I. N., Coal & Coke Ry., Haddon Hall.
 Kearney, A., N. & W. Ry., Shelburne.
 Kellogg, W. L., Pere Marquette R. R., Haddon Hall.
 Kinter, D. H., Monongahela R. R., Watkins.
 Lentz, John S., Lehigh Valley R. R., Dennis.
 McCarthy, M. J., C. C. C. & St. L., Marlborough-Blenheim.
 McCuen, J. P., C. N. & T. P. Ry., Dennis.
 McFeatters, F. R., Union R. R., St. Charles.
 McGrath, J. T., Chicago & Alton Ry., Marlborough-Blenheim.
 McRae, J. A., Michigan Central, Chalfonte.
 Miller, R. S., N. Y. C. & St. L. R. R., Marlborough-Blenheim.
 Montgomery, Hugh, Bangor & Aroostook R. R., Dennis.
 Parks, O. J., Penna. Lines, Traymore.
 Passmore, H. E., Toledo & Ohio Central Ry., Chalfonte.
 Peiffer, Charles E., Buffalo, Rochester & Pittsburgh Ry., Dennis.
 Peterson, A. F., Cold Blast Trans. Co., Haddon Hall.
 Portner, W. H., Q-C.
 Pratt, E. W., Chgo & Northwestern Ry., Marlborough-Blenheim.
 Ramage, J. C., Southern Ry., New Berkley.
 Ramsdell, T. M., C. & O. Ry., Chalfonte.
 Rockfellow, W. E., N. Y. C. & H. R. R. R., Pennhurst.
 Rollings, E. O., L. & N. R. R., Westminster.
 Russum, T. H., B. & O. R. R., Dennis.
 Savanson, Chas. N., A. T. & S. F., Dennis.
 Schrover, C. A., Chicago & N. W. Ry., Young's.
 Schultz, F. C., Chicago Car Interchange Bureau, Traymore.
 Searles, E. I., B. & O. R. R., Marlborough-Blenheim.
 Seddon, C. W., Duluth, Missabe & Northern Ry., Traymore.
 Seidel, G. W., Rock Island Lines, Traymore.
 Seley, C. A., Chicago, Rock Island & Pacific Ry., Chalfonte.
 Sitterly, W. H., Penna. R. R. Co., Traymore.

Smith, R. D., Boston & Albany R. R., Dennis.
 Smith, Willard A., The Railway Review, Dennis.
 Stark, F. H., Pitts. Coal Co., Chalfonte.
 Stewart, Alexander, Southern Ry., Marlborough-Blenheim.
 Street, Clement F., Mechanical Engineer, Marlborough-Blenheim.
 Taylor, Joe, Sec. M. C. B. Association, Marlborough-Blenheim.
 Thiele, Chas. F., P. C. C. & St. L. Ry., Dennis.
 Thomas, W. J., Panama Canal, 803 Atlantic Ave.
 Thompson, W. O., N. Y. C. & H. R. R., Marlborough-Blenheim.
 Tinker, J. H., C. & E. I. R. R., Strand.
 Tollerton, W. J., Rock Island Lines, Marlborough-Blenheim.
 Treleven, Thos. A., Grand Trunk Ry., Traymore.
 Walsh, J. F., C. & O., Marlborough-Blenheim.
 White, A. M., Colo. Midland Ry., Traymore.
 Wildin, G. W., N. Y. N. H. & H. R. R., Chalfonte.
 Wilson, R. D., P. & R. R. R., Monticello.
 Wood, L. L., C. & E. I., Young's.
 Wright, R. V., Chalfonte.
 Wymer, C. J., C. & W. I. R. R. Belt Ry., Traymore.
 Young, C. B., C. B. & Q. R. R. Co., Traymore
 Young, C. F.

M. C. B. GUESTS.

Alexander, G. H., N. Y. C. Lines.
 Allman, W. N., B. & O. R. R., Kenderton.
 Beahn, Peter, Penna. R. R., Motley Dean Cottage.
 Carey, W. S., Penna. Lines West, Runnell.
 Clark, W. S., N. Y. C., De Ville.
 Conard, G. P.
 Crane, W. F., Bangor & Aroostook, Dennis.
 Eddy, W. J., Rock Island R. R., Young's.
 Eich, H. C., Ill. Central, Haddon Hall.
 Flannagan, Harry, Great Northern Ry. Co., Dennis.
 Fletcher, G. A., Traymore.
 Gossett, Chas., Jr., Dennis.
 Griffith, H. W., Traymore.
 Hawk, R. R., Cold Blast Transportation Co., Haddon Hall.
 Hayes, H. B., A. A. Great Southern, Dennis.
 Hutchinson, F. E., Chicago R. & Pac. R. R., Dennis.
 Lentz, George, Borton.
 Litchfield, J. E., B. & O., Kenderton.
 Moore, Ralph P., Duluth & Iron Range R. R. Co., Traymore.
 Parker, A. McC., Marlborough-Blenheim.
 Quigley, Jos., C. N. O. & T. P. Ry., Dennis.
 Robertson, E. J., M. St. P. & S. S. M., Dennis.
 Smith, L. K., Wabash.
 Staley, P. C., Penna. R. R., Lexington.
 Stears, W. C., C. H. & D., New England.
 Telford, A., C. N. O. & T. P., Marlborough-Blenheim.
 Telford, Master Elliott A., C. N. O. & T. P., Marlborough-Blenheim.
 Thomas, Earl B., Panama, 803 Atlantic Ave.
 White, F. H., Duluth, Missabe & Northern Ry., Traymore.
 Yates, L. L., Pacific Fruit Express Co., Chalfonte.

THE SPECIAL TRAIN FROM CHICAGO.

The M. C. B. and M. M. special train from the West over the Pennsylvania road arrived in Atlantic City yesterday at 2.14 p. m., exactly on time. The equipment consisted of a buffet car, two dining cars and 12 Pullman sleeping cars. The train was in charge of E. K. Bixby, district passenger agent of the Pennsylvania Lines at Chicago. All on board enjoyed the trip. Among the passengers were the following: 235—

J. J. Acker, General Car Foreman C. R. I. & P., Horton, Kan.;
 W. L. Allison, Franklin Railway Supply Company, Chicago;
 Hugh S. Adams, Chicago; F. R. Angell, National Malleable Castings Company, Chicago; H. P. Bayley, Pyle-National Electric Headlight Company, Chicago; L. W. Barker, Locomotive Improvement Company, Clinton, Iowa; W. E. Ballentine, Willard Storage Battery Company, Chicago; M. K. Barnum, General Superintendent Motive Power I. C. R. R., Chicago; T. Broom Belfield, Philadelphia; R. L. Brown, National Block Washer Company, Chicago; C. L. Brown, Manning-Maxwell & Moore, Chicago; Geo. H. Bryant, Thomas Prosser & Son, Chicago; W. M. Boughton, Chicago; W. L. Bean, Jacobs-Shupert Company, San Francisco; M. C. Beymer, American Arch Company, Chicago; W. A. Bennett, Griffin Wheel Company, Chicago; J. M. Borrowdale, Superintendent Car Department I. C. R. R., Chicago; W. W. Breckenridge, Mechanical Expert, Galena-Sig-

nal Oil Co., Duluth, Minn.; M. F. Covert, Swift Refrigerator Transportation Company, Chicago; W. H. C. Carhart, Illinois Steel Company, Chicago; Mrs. W. H. C. Carhart, Chicago; J. W. Cyr, Superintendent Motive Power, C., B. & Q. R. R., Chicago; Miss Florence Caird, National Boiler Washing Company, Chicago; J. F. Comee, Camel Company, Chicago; E. E. Cook, Railway Journal, Chicago; Geo. R. Carr, Dearborn Drug & Chemical Works, Chicago; R. P. Cooley, Chicago Car Heating Company, Chicago; Geo. T. Cooke, Chicago Car Heating Company, Atlanta; Geo. Condon, A. T. & S. F. Ry., Topeka, Kan.; J. F. DeVoy, Assistant Superintendent M. P., C. M. & St. P., Milwaukee, Wis.; P. J. Duffy, Carpen Appliance Exhibit Building, Chicago; H. E. Daniels, West Disinfecting Company, Chicago; Chas. W. Dake, Consulting Engineer, Chicago; W. E. Dunham, Supervisor M. P. & M. C. & N. W. Ry., Winona, Minn.; W. W. Darrides, Camel Company, Chicago; F. T. De Long, Chicago Railway Equipment Company, Chicago; J. J. Dale, Celfor Tool Company, Chicago; L. L. Dawson, Superintendent Motive Power, Childress, Tex.; W. J. Eddy, Inspector Tools and Machinery, C. R. I. & P., Chicago; Fred. M. Egolf, Curtain Supply Company, Chicago; P. M. Elliott, Camel Company, Chicago; Mrs. P. M. Elliott, Chicago; Henry C. Eich, Master Mechanic I. C., Burnside, Ill.; Harry F. Finney, Independent Pneumatic Tool Company, Chicago; P. J. Ford, Crerar-Adams & Company, Chicago; Mrs. P. J. Ford, Chicago; Harry Flannagan, Great Northern, St. Paul, Minn.; Frank W. Furry, Ohio Injector Company, Chicago; William S. Furry, Ohio Injector Company, Chicago; Chas. Gaspar, National Malleable Castings Company, Chicago; T. P. Gaskins, Gilford S. Wood, Chicago; C. E. Gossett, General Master Mechanic, Cedar Lake Shops, Minneapolis, Minn.; A. S. Goble, Baldwin Locomotive Works, Chicago; E. H. Gold, Chicago Car Heating Company, Chicago; C. A. Hardy, Crane & Foundry Equipment Company, Chicago; P. B. Harrison, Chicago Railway Equipment Company, Chicago; Oscar C. Hayward, Tousey Varnish Company, Chicago; R. R. Hawk, C. B. T. Company, Chicago; J. W. Hathaway, Union Draft Gear Company, Chicago; J. J. Hennessy, M. C. B., C. M. & St. P., Milwaukee; E. R. Hibbard, Grip Nut Company, Chicago; E. W. Hodgkins, Chicago; Lee P. Hynes, Railway Utility Company, Chicago; P. C. Jacobs, H. W. Johns-Manville Company, Chicago; Emery E. Jett, M. C. B., Morris & Co., U. S. Yards, Chicago; Frank J. Johnson, Car Manufacturers, Chicago; L. F. Jordan, The Texas Company, Chicago; W. L. Kellogg, Superintendent M. P. Pere Marquette, Detroit, Mich.; Henry H. Kerr, Westinghouse, Church, Kerr & Company, Chicago; J. H. Kuhns, Republic Rubber Company, Chicago; E. B. Leigh, Chicago Railway Equipment Company, Chicago; Edwin F. Leigh, Chicago Railway Equipment Company, Chicago; John M. Lammedee, Railway & Engineering Review, Chicago; A. V. Manchester, Galena-Signal Oil Company, St. Paul; R. S. Mitchell, International Correspondence Schools, Chicago; W. N. Mitchell, International Correspondence Schools, Chicago; J. D. Murray, Mining Phosphate, Christmas Island; W. E. Magraw, The Railway List Company, Chicago; O. W. Middleton, Railway Master Mechanic, Chicago; W. S. Mellen, Heath & Milligan Manufacturing Company, Chicago; J. L. McGrath, Superintendent Rolling Stock C. & A., Bloomington, Ill.; Geo. McDonald, Dist. Car Inspector, C. R. I. & P., Kansas City, Kan.; Thomas O'Malley, O'Malley-Bear Valve Company, Chicago; Edward O'Malley, O'Malley-Bear Valve Company, Chicago; Ralph P. Moore, Purchasing Agent Duluth & Iron Range, Duluth, Minn.; C. J. Nash, Universal Draft Gear Attachment Company, Chicago; Wm. J. Pine, Railway Utility Company, Chicago; E. W. Pratt, Assistant Superintendent M. P. & Machinery, C. & N. W., Chicago; Mrs. E. W. Pratt, Chicago; B. Pratt, New York Air Brake Company, Chicago; L. R. Phillips, Nat'l Tube Company, Chicago; Mrs. L. R. Phillips, Chicago; Geo. H. Porter, Western Elec. Company, Chicago; J. D. Purcell, Dearborn Drug & Chem. Works, Chicago; F. H. Quail, Karpen Appliances Exhibit Bldg., Chicago; N. F. Rehm, Railway Supply Index-Catalogue, Chicago; J. T. Ross, Adams & West-

lake Company, Chicago; John J. Ross, U. S. Metal & Manufacturing Company, Chicago; E. J. Robertson, Superintendent Car Department, Minneapolis; Mrs. E. J. Robertson, Minneapolis; Harold A. Smith, Railway & Engineering Review, Chicago; Willard A. Smith, The Railway Review, Chicago; F. B. Smith, Bullard Machine Tool Company, Chicago; H. N. Scott, Griffin Wheel Company, Chicago; C. W. Seddon, Superintendent Motive Power and Cars, D. M. & N., Proctor, Minn.; F. C. Schultz, Chief Interchange Inspector, Chicago; Robert T. Scott, Independent Pneumatic Tool Company, Chicago; W. T. Sears, M. M., C. H. & D., Indianapolis; Edward C. Schmidt, University of Illinois, Urbana, Ill.; W. T. Simpson, S. F. Bowser & Company, Chicago; C. A. Seley, Master Mechanic, C. R. I. & P., Chicago; W. J. Schlachs, McCord & Company, Chicago; W. E. Sharp, Grip Nut Company, Chicago; Charles N. Swanson, Superintendent Car Shops, A. P. & S. F., Topeka, Kan.; John Tonge, Hotel Dennis, Minneapolis; H. A. Varney, National Boiler Washing Company, Chicago; E. V. Van Patten, Murphy Varnish Company, Chicago; G. N. Van Sweringen, Chicago Railway Equipment Company, Chicago; Arthur Wyman, Chicago Railway Equipment Company, Chicago; Mrs. Arthur Wyman, Chicago; D. O. Ward, Clinch Nut Company, Chicago; A. M. White, Foreman Car Department, Colorado City, Colo.; Ed. Wilhelm, Boss Nut Company, Chicago; Edward Wray, Railway Electric Engineer, Chicago; W. White, National Boiler Washing Company, Chicago; Mrs. W. White, Chicago; Charles J. Wymer, General Car Foreman Belt Railway, Chicago; W. G. Willcoxson, Grip Nut Company, Chicago; Harry S. Whitehair, McCord & Company, Chicago; A. C. Woods, Union Spring & Manufacturing Company, Chicago; F. H. White, Purchasing Agent, D. M. & N., Duluth, Minn.; L. L. Yates, Superintendent Car Department, P. F. E. Company, Los Angeles, Cal.; C. B. Young, Mechanical Engineer, C. B. & Q., Chicago; Mrs. C. B. Young, Chicago.

During 1910 more or less complete surveys were made for the line from Sinyang, on the Peking-Hankow line in the southern portion of Honan province, China, to Fungyang, one of the principal points on the Tientsin line in Anhwei province. This line is projected by the board of communications at Peking.

but no announcement has been made as to when the work will be pushed to completion. No work has been done, other than surveys.

STEEL UNDERFRAME TANK CAR.

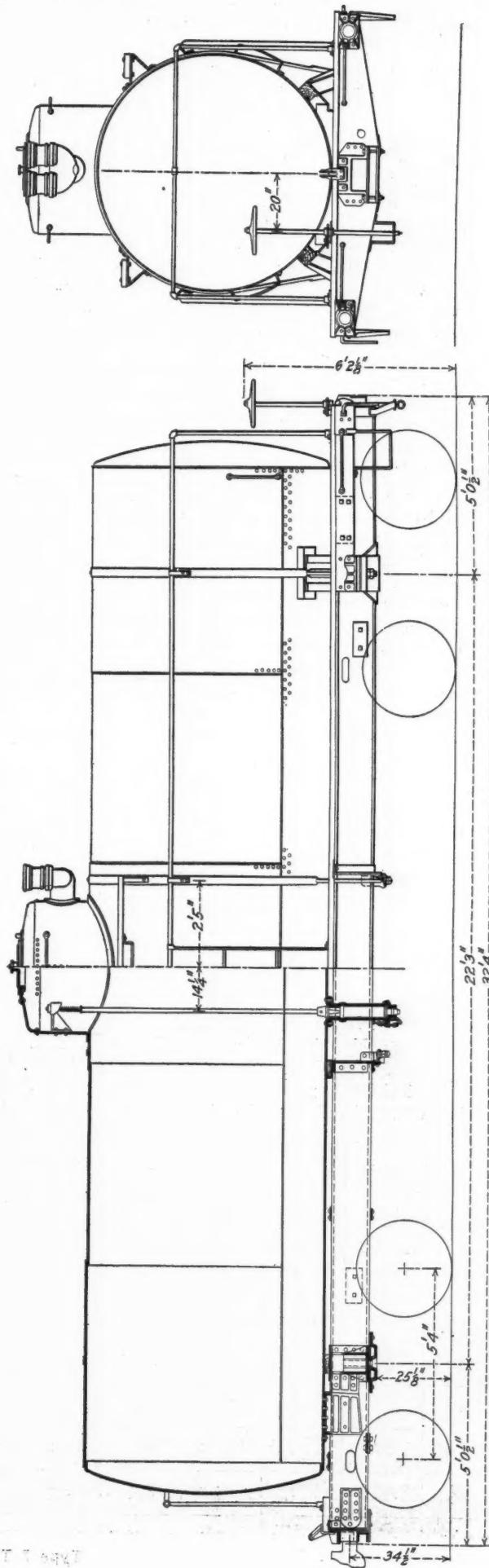
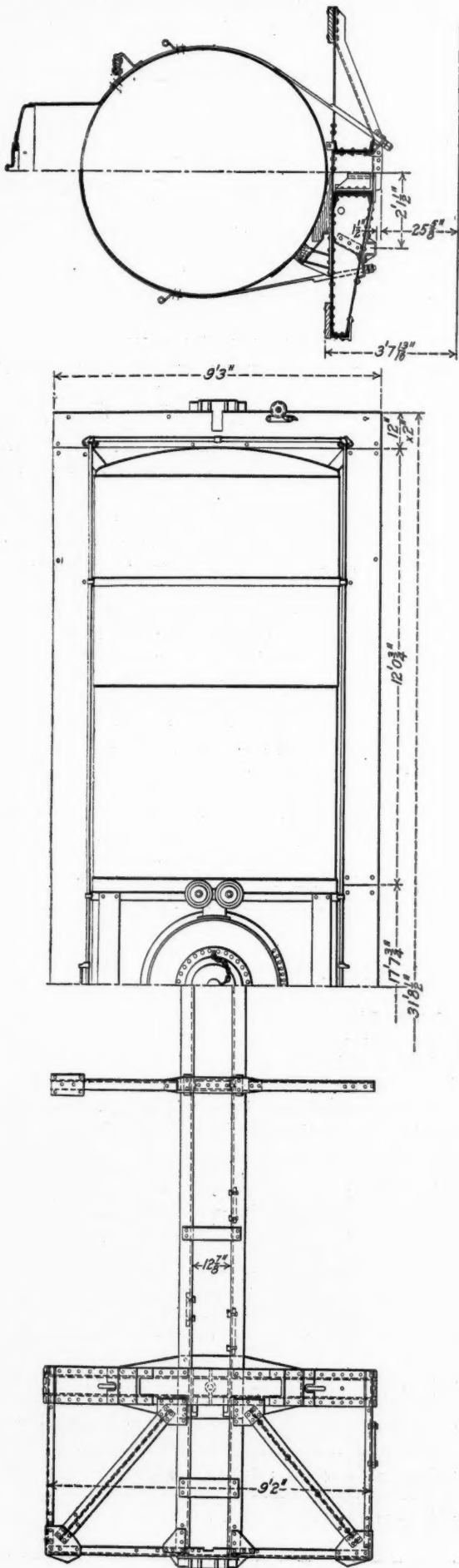
The American Car & Foundry Company, New York, has recently made some new designs of steel underframe tank cars, which are called the type 7 tank cars. These cars are designed to meet the present requirements of the M. C. B. Association, as well as of the Interstate Commerce Commission. The special feature is that of the tank anchor blocks, which are of cast steel and are riveted to the tank immediately ahead of the bolster, fitting tightly between an extension of the cast steel bolster center filler and the back of the friction block of the draft gear. In this way the tank is prevented from shifting and the expansion of the tank and underframe are duly allowed for. With this construction the buffing strains are considerably reduced.

The cars are equipped with the standard friction type of draft gear and the drawbar pull is nearly on a line with the center line of the center sills. The end platforms consist of 2-in. x 2-in. southern pine plank bolted to the sills. Low runways of southern pine are placed on each side of the car, securely bolted to the runway braces, the body bolsters and the side sills. They are provided with a ¾-in. iron pipe hand rail extending entirely around the tank. The dome may be reached on each side of the car by a ladder which extends from the runway to the hand rail, immediately above which is a dome step supported by brackets riveted to the tank bands.

The underframe is the American Car & Foundry standard and consists of 6-in. channel side sills extending from the end sill to the bolster. The center sill is made of two 13-in. steel channels, each having a sectional area of 15 sq. in. and extend the full length of car, being tied together between the bolster and the center of the car by ½-in. top and bottom tie plates. In addition to these tie plates the center sill channels are tied together and stiffened by two cross bearers which act as the running board supports. They consist of top and bottom members passing respectively over and under



Type 7 Tank Car.



Elevation and Plan of a Type 7 Tank Car.

the center sill with pressed steel diaphragms fitting in between them. The end sills are 5-16 in. pressed diaphragms connected to the side sills by malleable iron push pole pockets and to the center sill by cast steel striking plates, pressed steel knees and gussets. The body bolster consists of two $\frac{3}{8}$ -in. pressed steel web plates which are reinforced on the top by a 12-in. x $\frac{1}{2}$ -in. plate and on the bottom by a $20\frac{1}{2}$ -in. x $\frac{3}{8}$ -in. plate. The center plates are cast steel and are riveted to the bolster. Forged side bearings are bolted to the bolster so that the clearance may be adjusted and are reinforced at this point by forged struts extending up between the webs of the bolster. On top of the bolster and riveted to the cover plate and flange of the web is placed a malleable iron cradle to which are bolted the oak liner blocks that support the tank.

The car is equipped with automatic freight car air and hand brakes. They are mounted on standard freight car trucks and have an unusually low center of gravity. The American Car & Foundry Company is prepared to furnish tank cars of this type of from 6,000 to 12,500 gallons and of 6,000, 8,000 and 10,000 lbs. capacity.

THE NEW YORK SPECIAL TRAIN.

A special train on the Central of New Jersey brought a party for the conventions from New York City yesterday afternoon. The train consisted of a baggage car and four parlor cars. It left New York at 3.40 p. m. and arrived in Atlantic City at 6.45 p. m. Among those who came on it were the following:

Fred Atwater, Columbia Nut & Bolt Company; Henry Bartlett, M. S., Boston & Maine; W. M. Perrine, wife and son, M. M., C. R. of N. J.; W. A. Best; H. F. Birkel, New York Air Brake Company; Geo. L. Bourne and wife, Locomotive Superheater Company; E. G. Buchanan, Carbon Steel Company; J. H. Burwell; F. W. Chaffee and wife, General Car Inspector, N. Y. C. & H. R.; C. E. Chambers, wife and daughter, S. M. P., C. R. R. of N. J.; J. S. Chambers and wife, S. M. P., A. C. L.; J. H. Clark, wife and daughter, S. M. P., Staten Island Rapid Transit; G. G. Davis, General Foreman Car Department, C. C. C. & St. L.; W. Eckels, Standard Coupler Company; R. D. Gallagher, Jr., Standard Coupler Company; Wm. J. Grinden, Grinden Art Metal Company; W. H. Hall, Chief Inspector, C. R. R. of N. J.; Karl A. Heine, Pittsburgh Spring & Steel Company; Wm. T. Henry, New York Air Brake Company; L. J. Hibbard, R. B. Steele, R. P. Orcutt, Churchill Clark, C. Truesdale, L. J. Hibbard Company; John M. High, Pantasote Company; S. Hoffman and wife, Locomotive Superheater Company;

D. P. Lamoreux, Beaver Dam Malleable Iron Company; J. W. Marden and wife, Superintendent Car Department (retired); B. & M.; P. P. Mirtz and wife, Mechanical Engineer, L. S. & M. S. Ry.; O. H. Morgan, Chicago Varnish Company; John P. Neff and wife, American Arch Company; Fred. L. Olds, Chicago Varnish Company; O. H. Reynolds, wife and sister, Wm. Jessop & Sons; George W. Rink and wife, Mechanical Engineer, C. R. R. of N. J.; E. J. Ronan, Gold Car Heating & Lighting Company; E. T. Sawyer, Commercial Acetylene Company; F. H. Smith, Gold Car Heating & Lighting Company; Harry D. Vought and wife, Miss Mary Evelyn Dorrier, Secretary N. Y. R. R. Club; R. H. Weatherly and wife, The Pilliod Company; F. M. Whyte, New York Air Brake Company.

PRESSURE ON JOURNAL-BEARING WEDGES.

TO THE EDITOR OF THE DAILY RAILWAY AGE GAZETTE:

The accompanying table, prepared in our office, illustrates the effect of different widths of wedges in different sizes of journal boxes.

The wedge, due to its crowned surface, has theoretically, a line contact with the ceiling of the box, which makes necessary a comparison of the load per lineal inch width of the wedge.

You will note there is 1600 lbs. per lineal inch on the 20-ton wedge, which is 4.5 in. wide, and 2115 lbs. on the 30-ton wedge, which is 4.875 in. wide. If the width of the 30-ton wedge is correct for that load, the 20-ton wedge should be 3.41 in. wide instead of 4.5 in.; or, if the width of the 20-ton wedge is correct, the width of the 30-ton wedge should be 6.45 in. Again there is 2450 lbs. per lineal inch on the 40-ton wedge, which is 5.625 in. wide. Assuming this to be correct, the 30-ton wedge instead of being 4.875 in. wide would have to be 4.2 in. wide, and the 20-ton would have to be 2.94 in. wide instead of 4.5 in., or if the 20-ton wedge is correct, the 40-ton wedge would have to be 8.63 in. wide, and if the 30-ton wedge is correct, the 40-ton wedge would have to be 6.54 in. wide. In each case the widths of the wedges used, are underlined, the 20, 30, 40 and 50 tons being M. C. B. standard capacities. The three different widths of wedges of the 70-ton are various designs now being used.

The point we wish to bring out is that the load has been increased from 1600 lbs. to 3398 lbs. per lineal inch on wedges. There has been considerable trouble with the 50-ton wedges, with a load of 2800 lbs. per lineal inch, seating in the top of the boxes. In fact, one railway has gone to the extreme of attempting to put a steel insert at this point in grey iron boxes to increase the length of time the wedges in $5\frac{1}{2}$ in. x 10

Cap. Car Tons	Weight of Car Less Wheels & Axles	Weight on Journal Car Loaded	Size Journal	Dimensions of Brass in Contact	Projected Area Brass Sq. In.	Load Per Sq. In. on Brass	Width of Wedge	Load Per Lineal Inch on Wedge	WIDTH OF WEDGES						
									20-Ton	30-Ton	40-Ton	50-Ton	70-Ton		
													B. & O Penn	Harri-man	McCord Std.
20	17600	7200	$3\frac{3}{4}" \times 7"$	$3\frac{3}{4}" \times 6\frac{1}{4}"$	20	360	4.5"	1600	<u>4.5"</u>	3.41"	2.94"	2.57"	2.18"	2.14"	2.72"
30	22400	10300	$4\frac{1}{4}" \times 8"$	$3\frac{1}{2}" \times 6\frac{7}{8}"$	24	429	4.875"	2115	6.45"	<u>4.875"</u>	4.2"	3.68"	3.26"	3.03"	3.89"
40	30400	13800	5" x 9"	4" x $7\frac{7}{8}"$	$31\frac{1}{2}"$	438	5.625"	2450	8.63"	6.54"	<u>5.625"</u>	4.94"	4.37"	4.06"	5.21"
50	36800	17100	$5\frac{1}{2}" \times 10"$	$4\frac{1}{2}" \times 8\frac{7}{8}"$	40	427	6.125"	2800	10.7"	8.1"	6.95"	<u>6.125"</u>	5.41"	5.03"	6.46"
70	40000	22500	B. & O.-Penn. 6" x 11"	5" x $9\frac{7}{8}"$	$49\frac{1}{2}"$	455	7.125"	3157	14.06"	10.63"	9.2"	8.03"	<u>7.125"</u>	6.625"	8.500"
70	40000	22500	Harri-man 6" x 11"	5" x $9\frac{7}{8}"$	$49\frac{1}{2}"$	455	6.625"	3398	14.06"	10.63"	9.2"	8.03"	7.125"	<u>6.625"</u>	8.500"
70	40000	22500	McCord Std. 6" x 11"	5" x $9\frac{7}{8}"$	$49\frac{1}{2}"$	455	8.500"	2647	14.06"	10.63"	9.2"	8.03"	7.125"	6.625"	<u>8.500"</u>

NOTE—Underlined figures show present M. C. B. width of wedge, and widths of wedges shown in same column indicate what the width would be if same proportionate bearing were given to the other sizes.

in. boxes are adjustable. We have never heard of any wedges seating trouble in the 40-ton boxes, from which it is fair to assume that some place between the loading per lineal inch of the 40- and 50-ton boxes should be determined on and that loading used on journal boxes of future design.

You will note, if we assume the 40-ton wedge is correctly loaded, the wedge in 6 in. x 11 in. boxes would have to be 9.2 in. wide instead of 6.625 in. and 7.125 in. as in the two present designs. We have assumed a load of 2647 lbs. per lineal inch in designing the wedge 8.5 in. wide.

McCord & Company.

FOREIGN RAILWAY NOTES.

Of the 5,404 miles of railway actually in operation in China, 2,433 miles are in what may be termed the Manchurian division. About two-thirds of the roads operated are Japanese and Russian. In this portion of China, railway construction has been hastened in recent years for a number of reasons. The general aspect of the railway situation in Manchuria has changed comparatively little in the past year. The Kirin-Hoiryong line was held in abeyance until the completion of the Kirin-Changchun line. During 1910 work was continued with little interruption, and on the whole it has been successful. The line is constructed by Chinese and Japanese interests, each furnishing half the capital; but the railway will have comparatively little traffic until the Hoiryong extension via Kirin and Omoso to the Chientao district and the banks of the Tumen is built. A branch line will run from there to the port of Hungchun, and Japanese owners of connecting lines plan to connect with their harbor of Chyongjin in northern Korea. During 1910 surveys of the Kalgan-Suiyuan-Kweihuancheng line were made under the direction of the Chinese government and work is being carried on rapidly. The railway is to open up a part of China now practically unknown to the outside world. It is promised that the road will be running as far as Tienchen this summer. It is planned to extend the line to Urga and Kiahtka and it may therefore form a link between Peking and the Trans-Siberian railway, which will reduce the transit period between Europe and the Chinese capital by about two days.

The construction of small lines and connectors of the larger lines in the central portion of China seems to be almost entirely suspended. The reason in almost every case appears to be a lack of funds on the part of the Chinese promoters and an unwillingness to place loans abroad. Thus, in the case of the proposed line from Nanking or Wuhu to the sea at Ningpo by way of Hangchow, a company was formed at Wuhu some years ago with the title Anhwei Railway Company, for the purpose of constructing a line from Wuhu to the town of Kwangtechou, near the frontier of Chekiang province. Work was commenced in 1906. Up to date all that has been accomplished is the construction of the embankment as far as the village of Wanchih, some 30 miles from Wuhu, and the construction of two or three single-track bridges in that section. The site of the future terminus, on the foreign settlement at Wuhu, has not even been filled in. A few trolley lines and dumping wagons, with some piles of sleepers, are the only indication that railway construction is, or has been, in progress. No machinery, rolling stock, or other requisites of a railway have been imported, and so far as known, none has been ordered. The progress made in 1910 is represented by the dumping of several thousand cubic yards of filling on the site of the terminus at Wuhu. As regards the future, more activity is promised, owing to the return to China of Lord Li Ching-fang, formerly Chinese minister in London. Lord Li was one of the original promoters of this line.

Conventionalities.

"Bureau of Information" sounds good; but where, or where can it be?

The dynamometer car used in making all of the tests was in charge of Isaac Simpson.

J. P. McCuen, former superintendent of motive power of the Queen & Crescent, is in Atlantic City renewing friendships among many of his former co-workers.

The familiar and always welcomed presence of Franklin P. Stoy, for many years mayor of Atlantic City, will be missed this year. Mayor Stoy passed away July 22, 1911.

We are de-lighted to see that prince of industry, A. C. Moore, general manager of the Safety Car Heating & Lighting Company. Mr. Moore looks well and natty, as usual.

J. A. Middleton, vice-president of the Lehigh Valley in charge of operation, is at the Marlborough-Blenheim with his family. He expects to go back to New York on Saturday.

William Miller, who was to have served on the entertainment committee, found at the last moment that, owing to the pressure of business, he would be unable to attend the conventions this year.

Beau Brummel and his artistic successors have all got to take their hats off to Frank T. Hyndman, of oil storage fame. The Nile green tie with amethyst cross bars which he affects is the last sartorial word.

One of the early callers at the office of *The Daily* was Stephen C. Mason, of the McConway & Torley Company. In his haste to get away, however, he forgot to leave a cigar for the editor.

Mr. and Mrs. Robert Alter arrived on Sunday evening and are stopping at the Hotel Dennis. Mr. Alter is connected with the American Tool Works and has recently been given charge of the export business, with the title of European manager.

Among the first to get here were Mr. and Mrs. D. C. Noble. As usual, they are staying at the Marlborough-Blenheim. Mr. Noble was recently confined to his home for some weeks by a severe attack of bronchitis; but no one would suspect it to look at him now.

One of those who will be missed by visitors to the office of *The Daily* is John N. Reynolds, western manager. In point of years of attendance at these annual gatherings, Mr. Reynolds is one of the "old guard." This would have made his thirty-seventh year.

Once again it is our pleasure to record Scott Blewett as among the first to arrive. Mrs. Blewett is with him and they are staying at the Marlborough-Blenheim. The glad hand as extended by Mr. Blewett certainly makes one feel that life is well worth living.

H. S. Hayden, who, with Mrs. Hayden, is staying at Chalfonte, has not led quite as strenuous a life during the last year as has his co-worker, Mr. Evans; but he, too, has resolved to devote some of his time to enjoying the air and pleasures that Atlantic City and the convention afford.

The year 1911 chronicled the death of Fred. A. Casey, of the Ashton Valve Company. Mr. Casey was the efficient chairman of the executive committee of the railway supply men for the conventions of 1900-01. Many of those who attend the conventions this year will speak in loving memory of genial Fred Casey.

Hats off! to Albert Waycot. He surely must have been a popular officer of the Supply Men's Association; for

according to the official program of entertainment and general information booklet, Mr. Waycot was president of the Supply organization "1889-1900," a period of eleven years.

Through the process of elimination, often practiced at political and other conventions, Heap Big Chief Johnson was deposed as head of the entertainment committee. But you can't down Johnson. He has reappeared this year in a dual capacity—a member of the executive committee and chairman of the exhibit committee.

J. Alexander Brown tried to force an entrance to the pier on Tuesday morning by flashing a badge that he wore at the International Railway Congress in Switzerland in 1910. It didn't work, however, because the doorman mistook the badge for an advertising dodge of a concern that makes adhesive plaster and kindred articles.

One of the early arrivals, and a welcome one, was E. S. Hedgcock, a member of both associations. Mr. Hedgcock is assistant to the superintendent of machinery of the Louisville & Nashville, at Louisville. Mrs. Hedgcock and daughter, Miss Mary Hedgcock, are with Mr. Hedgcock. They are stopping at the Chalfonte.

J. W. Fogg, master mechanic of the B. & O., Chicago Terminal, arrived Sunday in advance of even the "advance guard" of railway men. He was accompanied by Mrs. Fogg and is stopping at the Chalfonte. Mr. Fogg says he does not relish the separation, even for a short time, from his little daughter, who was born just before the convention last year.

W. F. Walsh, air brake inspector of the Chesapeake & Ohio, will attend the meeting of the Master Mechanics' Association. Mr. Walsh has been in charge of the extensive series of tests that have been made with the new locomotives of the Mallet, Mountain and Mikado types, which have given such splendid results in sustained capacity.

Mr. and Mrs. J. F. Deems arrived at the Marlborough-Blenheim on Monday afternoon. They motored down from New York. Mr. Deems was president of the Master Mechanics' Association in 1906, but this year, as president of the Ward Equipment Company, he again appears in the ranks of the supply-men, after an interval of ten years. His appearance clearly indicates that he finds his new work very agreeable.

A. Stewart, president of the Master Car Builders' Association and general superintendent motive power and equipment of the Southern Railway, reports a busy year on that road. The peach crop, which was practically a failure last year, promises to be exceptionally heavy this year. It will be necessary to move it within the next six weeks or two months, so that there will be a more or less heavy tax on the equipment during that period.

Ambrose Swasey, of The Warner & Swasey Company, with Mrs. Swasey, is staying at the Marlborough-Blenheim. Mr. Swasey entertained the members and guests of the American Society of Mechanical Engineers at dinner at the Union Club, Cleveland, on Thursday evening of last week. He will leave Atlantic City on Monday to attend a meeting of the nominating committee of the American Society of Mechanical Engineers in New York.

Our care-free friend, Harry W. Finnell, report says, is an entrant for national golf honors in the amateur championship to be held this summer on the Wheaton links, at Chicago. His many friends hope he will be among the leaders when the final scores are announced. And well may their expectations be attained to the highest pitch; for Harry, in recent practice, drove a golf ball so far and so true that friction has arisen between the United States army and navy, the navy wanting him as a dreadnaught and the army for a coast defense.

C. A. Schroyer, superintendent car department of the Chicago & Northwestern, appeared at the registration desk bright and early yesterday and was granted a special dispensation in order that he might have the privilege of paying his dollar and getting his button. Some delay was experienced in getting the secretary's records from the express office; and, except in the case of a few of the notables, such as Mr. Schroyer, the opening of the registration of railway men was delayed.

"Meet Me at the Fountain" may (?) prove a popular phrase on the pier this year, provided the management will live up to the efforts of the artist who sketched the "ice water" sign over the new sanitary dispensary of liquid refreshments. Just now its temperature, together with its proximity to the fish tanks, are apt to make one suspicious of its source. However, sanitation is sure desirable at any cost; so don't get peeved if you get your nose wet when first you try, but cultivate the art of sipping gracefully from the crest of the sparkling bubble.

J. F. Walsh, general superintendent of motive power of the Chesapeake & Ohio, arrived on Monday, accompanied by Mrs. Walsh and Miss Mary Walsh. They are stopping at the Marlborough-Blenheim. Mr. Walsh has a Mikado type locomotive which he is willing to match against all comers. It is hauling trains of 110 and 112 cars weighing 7,740 tons at speeds up to 15 miles an hour on 0.3 per cent. grades. If anyone has a non-articulated locomotive that is doing better than this in freight service, or better than the mountain type in passenger service, Mr. Walsh would be glad to compare notes with him.

Mr. and Mrs. R. J. Evans are staying at Chalfonte. It is Mr. Evans' idea to dilute business with a liberal percentage of pleasure. During the last year and a half Mr. Evans has had two narrow escapes from death. The first was an accident to his automobile on the road between Franklin, Pa., and Chautauqua, N. Y., when he was thrown out and injured severely. In the other accident he was thrown from a railway inspection car and badly bruised and cut on the face and head. To prove his staying qualities, he fooled everyone by getting well; and by way of diversion he planned and supervised the building of a new asbestos plant.

Charles F. Giles, superintendent of machinery of the Louisville & Nashville, Louisville, Ky., who has not attended the conventions since the gatherings at Lakewood, New York, in 1893, arrived Tuesday and registered at the Chalfonte. He is accompanied by Mrs. Giles and daughter, Miss Margaret Giles. These are the first M. C. B. and M. M. conventions attended by Mrs. Giles and Miss Giles. Mr. Giles is a member of both the M. C. B. and M. M. Associations and his presence at the meetings will be very welcome. Five Pacific type locomotives, designed and built at the Louisville shops under Mr. Giles' direction, have recently been placed in service. These locomotives are equipped with superheaters and brick arches and are being used on the heavy high-speed passenger trains with exceptionally good results. The Louisville & Nashville is building at its own shops all of its motive power and rolling stock, including the steel underframes for passenger coaches.

"Mine Host" Albert T. Bell, of Chalfonte, well known to conventionites, and who labored successfully with other prominent business men of Atlantic City to bring the M. C. B. and M. M. gatherings here in 1906 and subsequent years, has had two eventful experiences during the past year. On July 5 he occupied the passenger's seat with aviator Harry Atwood in an aeroplane flight along the ocean-front of Atlantic City. It was a most successful flight in spite of a twenty-five mile wind. In making the landing on the beach opposite the Brighton Casino the large audience was thrilled by witnessing a five-hundred foot volplane of the machine to a safe landing at the water's edge. "Mine Host" Charles D. White, of the Marlborough-Blenheim, shared also in the honors of the day by making a

flight with birdman Atwood. Mr. Bell's other experience was his taking a leading part in the rescue from the ocean off Atlantic City of Melvin Vaniman and crew in the dirigible airship "Akron."

David Holtz, for more than 30 years master of machinery of the Western Maryland, was for many years a familiar figure at these conventions. His death on May 30 last was not wholly unexpected, because he had been seriously ill for some weeks; but the end was sudden. He was bright and hopeful to the last, and had been looking forward to again meeting his old associates. Mr. Holtz was made of the kind of timber that was used to build the foundation of this country. He was well educated, and worked his way up from the bottom. At the outbreak of the civil war Mr. Holtz enlisted in the Union Navy as a marine engineer and served under Admiral Farragut through the four years' conflict. He took part in the battle of Mobile Bay and the siege of Fort Fisher. Physically, Mr. Holtz was slight and wiry; but his mind was broad and his disposition sweet and retired. His home life was a model for simplicity and happiness and those of us who were privileged to know his wife and daughters will at once recall the happy group of four who enjoyed every minute of their time at these annual gatherings. The two Misses Holtz and a son survive.

Toil has its compensations. Some of them are unique. A. W. Whitford got on the ground early last week with his two accordion-pleated baby fireboxes and proceeded to pose them. One of the boxes tips the beam at eight tons and the other at ten. No wonder, then, that A. W. exhibited external signs of nervousness when, at the fag end of a day, he put a jack under his favorite, the ten-tonner, and after working the lever a number of times noticed that the firebox didn't "hist." A few more strokes at the lever and it was observed from a perspective inspection that the floor had become sway backed. At four o'clock the following morning Contractor Lane found Whitford under the pier with one arm over a stringer and the rest of his anatomy coiled around a steel pile, assiduously examining the accordion pleats on the underside of the flooring. After some questioning it was learned that the early visit, all alone, was planned with the deliberation to learn whether a wireless "firebox at the bottom of the Atlantic" would have to be sent home if that jack handle was given another pull. Right here Conway emerged from behind another pile and a consultation followed. The result was that all three went above and, after some modifications of *modus operandi*, the obstreperous boiler plate was positioned. To add to the difficulty of the work, it was necessary to install the exhibit on a slanting floor and the finished effect is a little off perpendicular. It would be the "unkindest cut" if someone unacquainted with all these facts noticed aloud in the presence of the erectors that the front end seemed to have settled a little. We trust this publicity will restrain any such words.

The Chinese government, under the administration of Tang Shao Yi in the railway and communications department, planned a complete system of railways, connecting the various commercial centers of the empire. This plan included the construction of one or more railways from the present Peking railway system to connect with the Trans-Siberian railway near Lake Baikal or farther west, and thus cut off about two days in the journey from Europe to Peking and points south; a railway into Mongolia, another into Tibet, and still another into Kokonor. Tang Shao Yi urged the construction of the system across Shansi and Shensi, the system parallel to the Yangtze river, the connection between the Yangtze and Yunnan rivers, the Canton-Hankow line. Though these railways are still a matter of the future, it is highly probable that they will be built as quickly as circumstances will permit.

The Exhibit.

The Parkesburg Iron Company, Parkesburg, Pa., is erecting an addition, 175 ft. long, to its tube mill building, making the total dimensions 85 ft. x 800 ft. This enlargement was necessary to enable the furnaces to operate at full capacity.

The Pilliod Company, New York, last January increased the capacity of its works at Swanton, Ohio, so that, although it could previously only make 15 gears a month by working full time, in April it was able to ship 68 gears by working 13 hours a day, and in May, 65 gears. Plans are now under way to double the present capacity.

The Storrs Mica Company, Owego, N. Y., in addition to its mica headlight chimneys and lantern globes, is showing a new type of hose clamp, which is made in two pieces and is therefore easily removed from old hose without damage. This clamp is capable of repeated use, and it is claimed that a decided economy results from its use. The Storrs company has been made the general sales agent of this clamp.

The Ralston Steel Car Company, Columbus, Ohio, has been rebuilding its plant and making large additions. This work has almost been completed. The main shop has been remodelled, enlarged and equipped with new machinery. The building is now of all steel construction with asbestos corrugated roof, improved ventilators, skylights and other facilities. Additional traveling cranes, electric hoists, etc., have been installed in various departments, and the capacity of the shops has been increased so that 40 freight cars a day can now be turned out. This company, in addition to freight cars of all classes, makes steel underframes for cars and also furnishes miscellaneous parts for all kinds of repairs.

LOCOMOTIVE SUPERHEATER PROGRESS.

During the interval between the conventions of 1910 and 1911 the number of locomotives using highly superheated steam increased from about 6000 in all countries to approximately 9000. About 1000 of this increase was on American railways, which practically doubled the number in service in this country. The past year has shown an increase in the total number of superheaters in service in all countries of over 4000, making the total number in service at the present time between 13,000 and 14,000. Of this number over 2000 were applied to American locomotives, thus repeating the history of the previous year by adding 100 per cent to the number of locomotives equipped with superheaters in this country.

A notable feature in this increase in the number of superheaters applied to locomotives in the past year has been that the fire tube type has been adopted practically unanimously and of the fire tube type the top header design has been used to the almost total exclusion of all other designs. The probable reason for this practice is that the top header fire tube type superheater adapts itself most perfectly to the conditions and to best meet the requirements of simplicity in construction and design, accessibility for the maintenance parts of the locomotive adjacent to it, efficiency in operation, continuity of service and low maintenance costs. This design of superheater consists of an integral header located in the upper part of the smokebox, where it in no way obstructs the front end or interferes with the maintenance of the boiler flues. It is designed to reduce the wire-drawing effect of the steam to the minimum and the arrangement of superheater pipes in the large boiler flues is such that they are easily accessible and removable, and so constructed that the unequal expansion caused by the difference in temperature as the steam passes through them will be taken care of. A set

of superheater flues is located in the upper part of the boiler where the temperature is highest and the tendency toward clogging is least. This design of superheater furnishes steam continuously at a temperature from 600 to 650 deg. F., while the engine is working.

The remarkable progress that has been made in the application of highly superheated steam to locomotives in this country is shown by the following list of the users of the fire tube type of superheater.

Statement of superheaters ordered from the Locomotive Superheater Company up to June 1, 1912. "In service" includes all superheater equipment delivered to railways. "Under construction" includes all superheaters on order and not delivered:

Railway.	Superheater Locomotives		Total.
	In Service.	Under Construction.	
Algoma Central & Hudson Bay.....	10	5	15
Algoma & Eastern.....	..	2	2
Ann Arbor.....	2	3	5
Atchison, Topeka & Santa Fe.....	5	50	55
Atlanta, Birmingham & Atlantic.....	..	10	10
Atlantic Coast Line.....	..	20	20
Baldwin Locomotive Works.....	..	50	50
Baltimore & Ohio.....	72	5	77
Bingham & Garfield.....	3	1	4
Boston & Albany.....	11	..	11
Boston & Maine.....	1	..	1
Buenos Ayres.....	2	..	2
Buffalo, Rochester & Pittsburgh.....	12	1	13
Canadian Northern.....	116	..	116
Canadian Pacific.....	947	133	1,080
Central of Brazil.....	10	..	10
Central of Georgia.....	6	..	6
Central of New England.....	..	15	15
Central of New Jersey.....	1	..	1
Central Pacific.....	..	8	8
Charleston & Western Carolina.....	..	2	2
Chesapeake & Ohio.....	30	49	79
Chicago & Alton.....	30	..	30
Chicago & Eastern Illinois.....	10	..	10
Chicago & North Western.....	165	5	170
Chicago, Burlington & Quincy.....	4	..	4
Chicago Great Western.....	4	10	14
Chicago, Indianapolis & Louisville.....	11	19	30
Chicago, Indiana & Southern.....	8	6	14
Chicago, Milwaukee & St. Paul.....	37	140	177
Chicago, Rock Island & Pacific.....	50	50	100
Chicago, St. Paul, Minneapolis & Omaha.....	18	..	18
Chicago, Terre Haute & Southeastern.....	..	5	5
Cincinnati, New Orleans & Texas Pacific.....	5	..	5
Cleveland, Cincinnati, Chicago & St. Louis.....	104	36	140
Cuba Railroad.....	13	..	13
Cumberland Valley.....	1	1	2
Delaware & Hudson.....	9	12	21
Delaware, Lackawanna & Western.....	6	25	31
Duluth, South Shore & Atlantic.....	2	..	2
Duluth, Winnipeg & Pacific.....	10	..	10
Elgin, Joliet & Eastern.....	..	1	1
El Paso & Southwestern.....	20	..	20
Erie Railroad.....	46	..	46
Florida East Coast.....	5	..	5
Grand Trunk.....	9	..	9
Grand Trunk Pacific.....	40	..	40
Great Northern.....	22	..	22
Hocking Valley.....	..	7	7
Illinois Central.....	126	..	126
Imperial Government Railway of Japan.....	36	..	36
Imperial Pekin-Kalgan.....	..	2	2
Imperial Taiwan Railway of Formosa.....	..	3	3
Intercolonial Railway.....	5	..	5
Kanawha & Michigan.....	10	..	10
Kansas City Southern.....	20	..	20
Lake Erie & Western.....	8	7	15
Lake Shore & Michigan Southern.....	173	61	234
Lehigh Valley.....	1	22	23
Louisville & Nashville.....	13	25	38
Maine Central.....	9	..	9
Manila Railway.....	..	10	10
Michigan Central.....	37	30	67
Minneapolis, St. Paul & Sault Ste Marie.....	37	5	42
Missouri, Kansas & Texas.....	7	..	7
Missouri, Oklahoma & Gulf.....	..	5	5
Missouri Pacific.....	65	15	80
Mobile & Ohio.....	6	4	10
New Orleans, Mobile & Chicago.....	..	12	12
New York Central.....	360	85	445
New York, Chicago & St. Louis.....	4	..	4
New York, New Haven & Hartford.....	21	..	21
New York, Philadelphia & Norfolk.....	1	..	1
New Zealand Government.....	14	..	14
Norfolk & Western.....	27	31	58
Northern Pacific.....	99	..	99
Oregon Short Line.....	..	30	30
Oregon, Washington R. R. & Navigation Co.....	3	15	18
Paulista Railway.....	..	3	3
Pennsylvania.....	80	37	117
Pennsylvania Lines West.....	28	..	28
Peoria & Eastern.....	10	..	10
Pere Marquette.....	30	..	30
Philadelphia & Reading.....	1	..	1
Philadelphia, Baltimore & Washington.....	..	1	1
Pittsburgh & Lake Erie.....	5	6	11
Purdue University.....	1	..	1
Rutland Railroad.....	6	5	11
St. Louis & Hannibal.....	..	1	1
St. Louis & San Francisco.....	33	..	33
St. Louis & Southwestern.....	..	18	18
Seaboard Air Line.....	2	..	2
Southern Railway.....	60	5	65
Southern Pacific.....	..	57	57

South African Government Railway.....	16	..	16
Temiskaming & Northern Ontario.....	..	4	4
Terminal Railways of St. Louis.....	..	15	15
Toledo & Ohio Central.....	1	11	12
Toronto, Hamilton & Buffalo.....	3	4	7
Union Pacific.....	..	40	40
Vandalia.....	4	..	4
Virginian.....	9	5	14
Virginia & Southwestern.....	7	..	7
Wabash, Pittsburgh Terminal.....	1	..	1
Western Maryland.....	1	24	25
Western Railway of Havana.....	2	..	2
Total.....	3,226	1,279	4,505

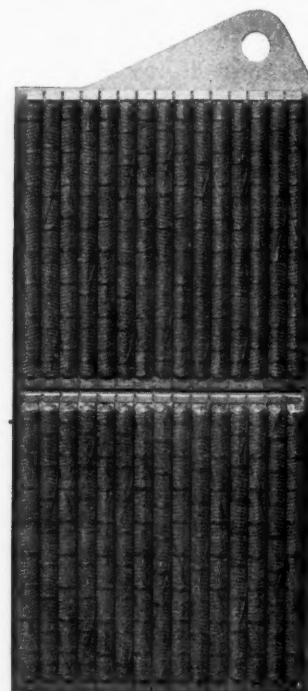
EDISON STORAGE BATTERY FOR TRAIN LIGHTING.

The statement has been made by the Edison Storage Battery Company, Orange, N. J., that at least ten years of service should be obtained from the storage batteries in car lighting service, with little or no depreciation in capacity. These batteries are compact, requiring a comparatively small amount of space; are free from chemicals and electrical troubles and are practically indestructible.

The old type storage battery, with which all car-lighting men are familiar, consists of lead plates immersed in sulphuric acid. The Edison Storage Battery plates consist of nickelled steel frames with the active material enclosed in perforated nickelled steel tubes and pockets, instead of being formed on the surface of the plates. The active materials are nickel hydrate and metallic iron. The elec-



Positive Electrode Tube.



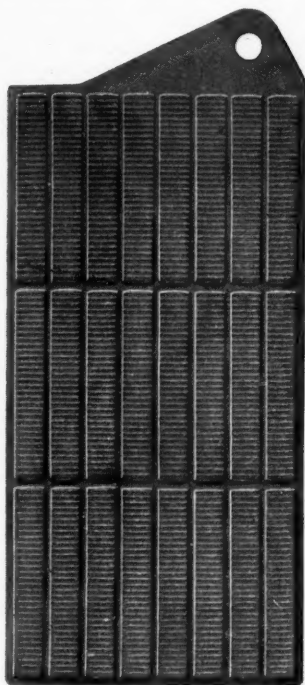
One of the Positive Electrodes.

trollyte is a solution of 21 per cent. potassium hydrate with a small amount of lithium hydrate. The elements are placed in a nickelled steel container.

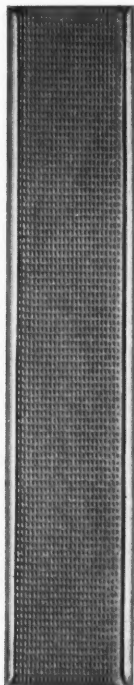
The positive or nickel plate consists of thirty perforated steel tubes in two rows, heavily nickel-plated, filled with alternate layers of nickel hydroxide and exceedingly thin flakes of pure metallic nickel. The tube is formed from a perforated ribbon of nickel-plated steel, and has a lapped spiral seam. This tube, after being filled with active material, is reinforced with eight seamless steel rings which prevent the tube expanding away from and breaking contact with its contents. The tubes after being flanged at both ends are clamped into perfect contact with a steel frame or grid, made of cold-rolled steel, heavily nickel-plated.

The negative or iron plate consists of a grid of cold-

rolled steel, nickel-plated, holding a number of rectangular pockets filled with powdered iron oxide. These pockets are stamped from a ribbon of very finely perforated nick-



One of the Negative Electrodes.



Pocket for Negative Electrode.

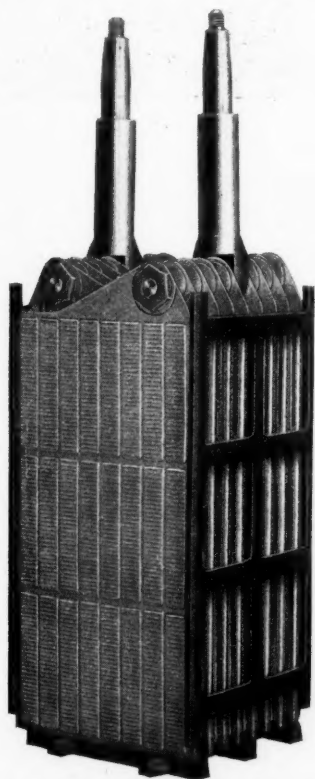
elled steel. After the pockets are filled, they are inserted in a grid and subjected to great pressure between dies which corrugate their surfaces, and force them into integral contact with the grid.

The method of insulating the plates from each other,

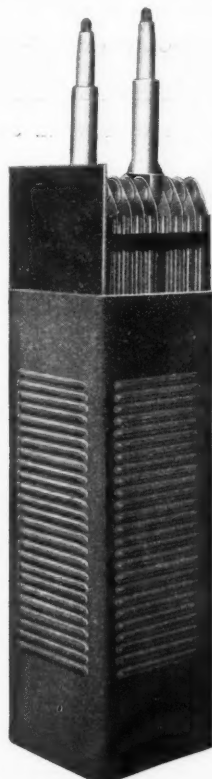
and from the steel container is illustrated. After the plates have been assembled into a complete element, narrow strips of specially treated hard rubber are inserted between them, thereby separating them and insulating them from each other. These correspond to the wood and rubber separators used in lead batteries, but unlike them are not injured by the electrolyte and need never be renewed. The end insulator is provided with grooves that take the edges of the plates and insulate the complete element from the steel container. At the sides of the element, that is, between the outside negative plates and the container, are inserted smooth sheets of hard rubber. At the bottom the element rests upon a hard rubber rack or bridge, insulating the plates from the bottom of the container. This bridge is shallow, providing very little sediment space, such provision being unnecessary in the Edison cell because active material is not precipitated from the plates.

The container or jar is made from cold-rolled sheet-steel of fine quality, welded at the seams by the autogenous method, making leakage or breakage from severe vibration impossible. The walls of the container are corrugated so as to give maximum strength with minimum weight. The steel is heavily nickelled as a protection against rust. As an additional protection, the cell is dipped in a compound which gives it a tough, yet flexible, insulating coating. The bottom of the container is also of cold-rolled steel. Containers for car lighting cells are made three inches higher than those for vehicle service, giving greater capacity for electrolyte.

The cover is of the same quality nickelled sheet-steel. Mounted on the top, and situated between the two terminals, is the gas vent and filling aperture combined. This consists of a seat, a hemispherical valve, and a top actuated by a spring to remain fully open for filling, or closed for operating, as desired. The valve is so arranged that as the gas pressure in the cell rises sufficiently to raise it, the escaping gas flows by and out under the spring-actuated



Edison Storage Battery as Assembled Before Placing in Container.



Contents of Edison Storage Battery Container Partly Lifted.



Edison Storage Battery Cell.

top. It is evident that gases from within the cell can get out, but impurities, air, etc., from without cannot get into the cell.

The method of assembling plates on steel connector rods with steel spacing washers, all being attached to the terminal post, is shown in one of the illustrations. The posts are turned up from steel bar stock, the top of the terminal being tapered and ground to an exact fit with the terminal lug. The tip of the post is threaded to take a nut which holds down the lug. The terminal posts are effectually insulated from the cover by means of hard rubber washers and bushings. A soft rubber washer, used for packing to prevent the solution from creeping, also serves as an insulator. This packing washer is held down by a heavy hard rubber gasket threaded into a pocket on the cell cover. The rubber gasket at the positive pole is red in color while that at the negative pole is black. The positive pole is further distinguished by a plus mark stamped into the steel cover.

The terminal lug is a drop forging of steel, bored and reamed and ground to a taper, to fit the tapered top of the terminal post. The connecting link between the two lugs is of copper. The copper link is swedged into the lug forgings, making a perfect and permanent contact. These links are made in various lengths to suit the spacing of the different size cells. After the swedging, the link with its lugs is given a heavy coating of nickel. Car-lighting men will appreciate the Edison method of connecting and

COMPOSITE GONDOLA CAR.

The New York Central Lines have recently received 1,000 composite gondola cars from the Pressed Steel Car Company, Pittsburgh, Pa., which are designed to handle pipe and structural steel. They are 46 ft. long and are constructed to carry a 110,000 lb., uniformly distributed load, with a possibility of a 10 per cent. overload. With these cars it is possible to load two tiers of 22 ft. pipe, whereas with old 40 ft. and 42 ft. cars but one tier could be loaded. The cars are equipped with drop ends, in case it should be desired to load material of more than 46 ft. in length, and are made strong enough to carry $\frac{3}{8}$ of the rated capacity concentrated over a space 10 ft. long at the center of the car.

The underframes are of the built-up type with two center sills 30 in. deep at the center and 12 in. deep over the bolsters, and two side sills 26 in. deep at the center and 10 in. deep over the bolsters. The center sills are made of $\frac{3}{8}$ in. thick steel plates and each sill is reinforced at the bottom with two 4 in. x $3\frac{1}{2}$ in. x $\frac{1}{2}$ in. angles, and at the top by one $3\frac{1}{2}$ in. x 3 in. x $\frac{3}{8}$ in. angle, the two sills being tied together by a cover plate $\frac{7}{16}$ in. thick by $21\frac{1}{4}$ in. wide. The center sills run continuously through the body bolsters, and the draft sills, which are made of $\frac{3}{8}$ in. pressed steel are spliced to them immediately in front of the bolster. The side sills are made of $\frac{7}{16}$ in. steel plates and are reinforced at the top and bottom by a 4 in. x $3\frac{1}{2}$ in. x $\frac{1}{2}$ in. angle. They extend from end to end of the car and are connected to the end sills by means of



46-Ft. Composite Gondola Car.

disconnecting cells. No cutting of lead straps is necessary, nor is there any lead burning to be done. Remove the side slats, unscrew two nuts and lift the cell out of the set.

The electrolyte does not vary in density as does the acid electrolyte in a lead battery, nor is the capacity of the Edison battery affected by slight variations. Frequent specific gravity readings are, therefore, unnecessary. For convenience a special cell filler has been designed which rings a bell when the electrolyte has reached the proper height in the container.

There is no acid used in the Edison cell, and consequently no acid fumes are given off, nor is there any corrosion.

The cells are assembled in wooden trays with pressed steel cradles suspended from the sides. The flange on the bottom of each cell fits into a groove in the cradle, and a pressed steel "hold-down" at the top keeps it rigidly in position. The tray is designed with an air space beneath the steel cradles, making the grounding of cells impossible, unless a great amount of dirt is allowed to accumulate. The weight of a single tray with 3 cells for car lighting, 300 ampere hours capacity, is only about 100 lbs.

The average discharge voltage of the Edison cell is 1.24 volts at the eight hour rate of discharge. The standard number of cells is therefore, 25 for 30-volt equipments, and 50 for 60-volt equipments.

pressed steel sub-side sills. The end sills are made of 10-in. channels with a $\frac{7}{16}$ in. pressed steel angle cover plate riveted to the top flange.

The body bolster is made of pressed steel diaphragms placed back to back with a top cover plate of $\frac{1}{2}$ in. steel, 16 in. wide and a bottom cover plate of $\frac{1}{2}$ in. steel 14 in. wide securely riveted to the flanges. The ends of the body bolster are fastened to the side sills with two 6 in. x $3\frac{1}{2}$ in. x $\frac{3}{8}$ in. angles. There are two cross bearers near the center of the car, made up of $\frac{1}{4}$ in. pressed steel plates, flanged on all sides, with a $\frac{3}{8}$ in. top cover plate 10 in. wide passing through the web of the center sills immediately under the top reinforcing angles, and a bottom cover plate of the same size passing under the center sills and riveted to the flanges of the diaphragms and center sill bottom angles. In addition to the cross bearers there are 8 sets of floor supports made of $\frac{1}{4}$ in. pressed steel extending between the center and side sills.

The floor is made of $2\frac{1}{2}$ in. yellow pine, tongued and grooved, and the sides of 3 in. yellow pine capped with a 3 in. x 3 in. x $\frac{1}{4}$ in. protection angle, and held by twelve $\frac{5}{16}$ in. pressed steel stakes on each side and a double corner post of $\frac{5}{8}$ in. steel at each corner, which also forms a stop for the end gate. Each side of the car is also fitted with 9 pairs of outside stake pockets. The ends of the car are constructed of $3\frac{1}{2}$ in. x 10 in. yellow pine boards bound together in the shape of gates which fold backward flat upon the floor of the car.

The sill steps, hand holds and all safety appliances are strictly in accordance with the Interstate Commerce Commission requirements. The cars are equipped with the Westinghouse HC-10-12 air brakes, tandem spring draft gear, cast steel 5 in. x 7 in. shank couplers, ball bearing center plates and side bearings and 5½ in. x 10 in. trucks with cast steel side frames.

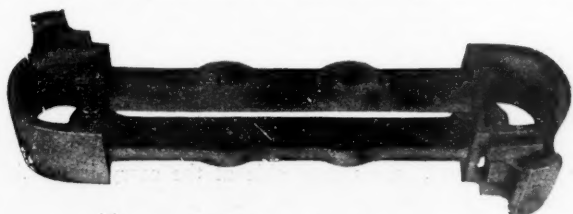
The general dimensions are as follows:

Length inside of car.....	46 ft.
Width inside of car.....	8 ft. 9 in.
Height inside of car.....	2 ft. 6¼ in.
Length over end sills.....	47 ft. 9 in.
Width over all.....	10 ft. 0 in.
Height from top of rail to top of floor.....	3 ft. 10½ in.
Height from top of rail to top of sides.....	6 ft. 5½ in.
Distance from center to center of trucks.....	37 ft. 3 in.
Cubic capacity level full.....	1,015 cu. ft.
Weight of car body.....	30,200 lbs.
Weight of trucks.....	15,800 lbs.
Total dead weight.....	46,000 lbs.
Maximum load uniformly distributed.....	121,000 lbs.

DUPLEX BRAKE BEAM STRUT.

The new brake beam strut, here illustrated, is a one-piece casting designed to permit the use of the brake beam for either right or left hand in emergencies and avoid the objections that have been raised to the reversible strut which is made up of several parts.

The many advantages of being able to use a beam as either right or left hand are obvious. Another good feature of this strut is that it is provided with two lever pin holes. As these

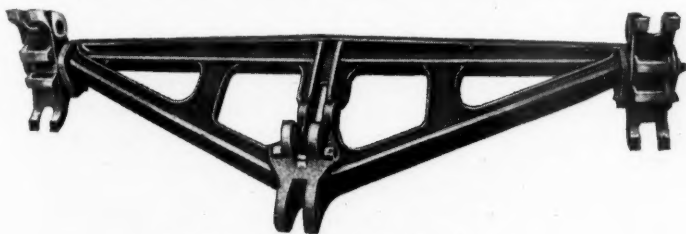


Duplex Brake Beam Strut.

holes wear in the line of pull, the life of the brake beam may be increased by reversing the strut, and so allowing the use of the second and unworn pin hole. This strut surrounds the brake beam tension member and in this way makes it safer. The beams equipped with these struts, as made by the Chicago Railway Equipment Company, are provided to take the Creco sliding third point support and the struts are designed to clamp about the beam compression member in several different ways to suit the requirements of service.

VULCAN CAST STEEL BRAKE BEAM.

A prominent feature of the exhibit of the American Steel Foundries, Chicago, is the Vulcan cast steel brake beam and the Sampson bolster. The Vulcan beam is made of a one-piece steel casting and is intended for use with a high speed brake



Vulcan Cast Steel Brake Beam.

in connection with P. C. or L. N. air brake apparatus. The deflection of this beam under heavy loads is very small, and, owing to the construction, the deflection at the end of years of service will be no greater than when new, as there are no loose parts about the beam to wear out or break.

FORSYTH RADIAL YOKE CONNECTION.

The Forsyth "Radial" Yoke Connection is designed, not merely for a simple and durable connection between the draft gear and the drawbar, and one that can be used with any standard draft gear and drawbar, but to eliminate destructive side strains by allowing both the drawbar and yoke plenty of side clearance on curves. Heretofore the chief objection to a

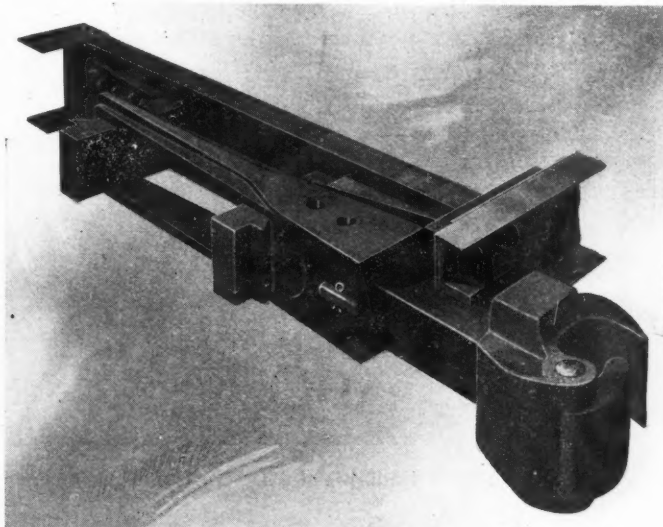


Fig. 1—Forsyth Radial Yoke.

yoke, or strap connection, has been the shearing of yoke rivets. It is manifestly unjust to condemn a yoke because of the occasional failure of the *means of connection* between it and the drawbar, when such failures can be practically eliminated. It has been customary to maintain the old wrought iron yoke, with uniform width throughout its length, substantially on the center line of the gear by bringing up the follower stops, or

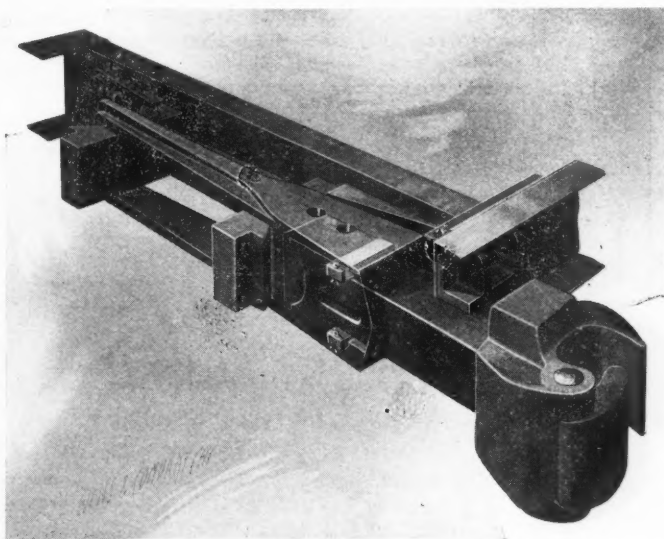


Fig. 2—Forsyth Radial Yoke, Arranged with Key Attachment to Coupler.

draft lugs, within a short distance, say ½ inch, of the lateral edges of the yoke. Under these conditions, it is evident that when the drawbar allows a slightly increased side travel, the yoke first strikes against one of the follower stops, and then becomes actually bound between the diagonally opposite follower stops. The drawbar and yoke are now to each other like the blades of a shear, and further movement of the drawbar to one side can only have the effect of transmitting enormous

shearing strains to the yoke rivets. These stresses, rather than those of draft, have caused the failure of the yoke rivets in the past. Proof of this can be found by examining cars in service, on which it will frequently be noted that—even where the inwardly turned lips at the front end of the yoke are at right angles to the drawbar and in good condition, and also engage the shoulders of the drawbar butt—the rivets are nevertheless found to be loose or sheared.

Under buffing stresses or on curves it must be evident that greater clearance is needed between the inner end of the yoke and the rear follower stops, or draft lugs, than is required between the drawbar butt and the front follower stops. In order to meet this condition, the Forsyth yoke is tapered horizontally

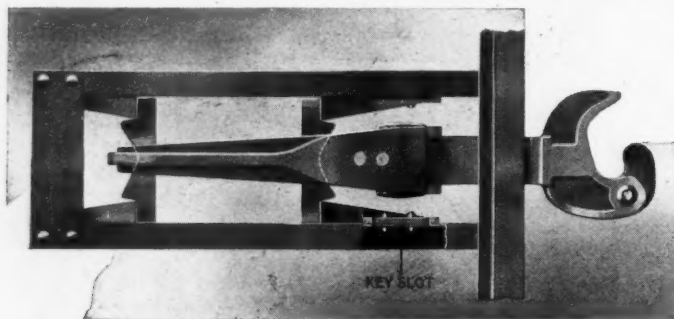


Fig. 3—Forsyth Radial Yoke in Central Position.

toward its inner end, with a corresponding increase in the vertical thickness to preserve a uniform cross sectional area and maintain a uniform strength throughout.

In the Forsyth yoke, Fig. 1, there is provided immediately back of the drawbar butt a vertical member cast in one piece with the yoke, which member has a convex face adapted to bear against the outer face of the front follower. The rear vertical wall of the yoke is also provided with a corresponding convex face, designed to bear against the outer face of the rear follower. It will be noted that the outer faces of the followers are provided with inclined bearing surfaces, which engage the convex bearing surfaces of the yoke. When the drawbar and yoke are drawn to one side on a curve, and then released, the

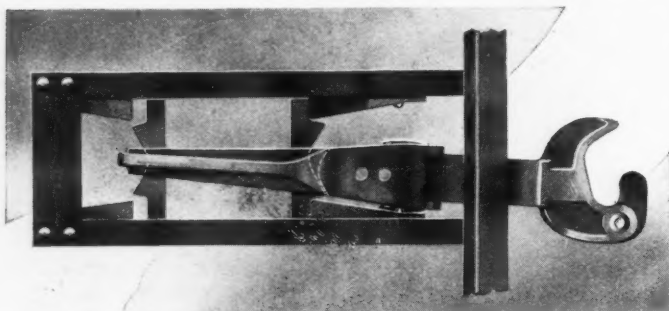


Fig. 4—Forsyth Radial Yoke on Curve.

spring of the draft gear will thrust the followers outward, causing the convex faces of the yoke to slide down the concave faces of the followers, and thereby return the drawbar and yoke to an automatic coupling position. There is sufficient play allowed to effect coupling on curves, but the radial device will always return the drawbar on straight track sufficiently close to the center of the track to permit automatic coupling.

The rounded bearing surfaces also prevent the canting of the followers on curves, and the consequent side distortion of the draft gear. Heretofore, where the rocking has taken place between flat surfaces (as between the flat ends of the drawbar and the flat face of the front follower), canting of the followers has taken place and the draft gear has been unevenly worn and injured. Another point of merit in the Forsyth radial yoke, in connection with the front bearing at the inner end of the draw-

bar, is that this bearing acts as a stop member to prevent end displacement of the gear and followers when the drawbar is removed. Heretofore, when replacing an old drawbar, it has been necessary to re-assemble the gear within the yoke under tension.

The Forsyth radial yoke connection may be attached to the drawbar butt by means of the ordinary yoke rivets or by keys. The latter, as shown in Figs. 1 and 2, may be a central one, adapted for insertion through a corresponding slot in the drawbar; or, if the drawbar is not provided with a center slot, top and bottom keys can be used, as shown in Fig. 2. These afford a greater area of contact to withstand the shocks than the center key, as they bear clear across the shoulders of the drawbar butt, as well as against corresponding shoulders on the top and bottom walls of the yoke. The yokes can be furnished to take a $9\frac{1}{8}$ -inch, or any other height of drawbar butt.

In general freight car construction working within $\frac{1}{8}$ in. to $\frac{1}{4}$ in. is usually acceptable, and, therefore, it must be evident that when the gear goes solid against a front or rear abutment, it is practically impossible for the ends of the keys to strike the ends of the slots at the same time. On curves it is impossible, as, in the latter case, the keys are no longer at right angles to the sills, and, therefore, could only strike the ends of the slots on one side, affording the gear a weak stop bearing, in addition to cutting down the travel.

The chamber at the forward end of the Forsyth yoke is made sufficiently large to allow for variations in the drawbar butt, without permitting undue or objectionable lost motion at this point.

The cost of the radial yoke and followers is moderate, especially when it is considered that they take the place of the ordinary wrought iron yoke and flat followers and that they include a centering device for both the yoke and drawbar. The drawbar of a freight car should be allowed a side clearance of at least 2 in. on each side at the carry iron. After a clearance of 1 in., automatic coupling is made more certain by the use of a centering device, otherwise the guard arms and knuckles will frequently pass by each other. A drawbar centering device for freight equipment (wherein the yoke or other means of attachment should swing with the drawbar on curves) must center both the drawbar and the yoke. In the case of passenger cars, however, where the drawbar is pivoted to the yoke, a centering device located at the carry iron, for centering the drawbar only, is sufficient.

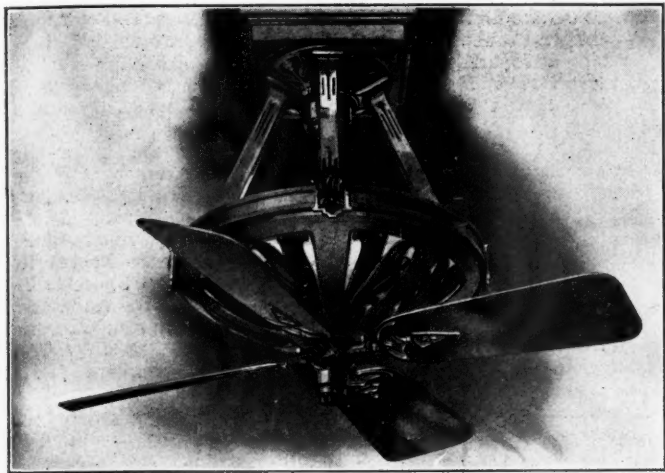
Figs. 3 and 4 show the drawbar and radial yoke on straight and curved tracks respectively. The radial yoke has been proved out by years of service. It is manufactured by Forsyth Brothers Company, of Chicago.

ELECTRIC FIXTURE COMBINING INDIRECT LIGHTING AND PADDLE FANS.

The Frisco Lines have recently installed a rather unique arrangement of fans and lighting fixtures on several new club-cafe cars. In considering the use of electric indirect lighting and electric paddle fans, it was found undesirable to install separate fixtures for each of these systems, owing to the resulting crowded appearance of the car ceiling. Several suggestions were considered to overcome this difficulty, and The Safety Car Heating & Lighting Company, New York, was asked to submit a suitable fixture. As a result, the fixture illustrated herewith was finally accepted and installed, in which both the indirect lighting and the paddle fans are combined. This arrangement is a novel one, and from the illustration it will be seen that the effect is not displeasing.

A motor is installed in each of the fixtures, and is located above the ceiling base of the fixture between the ceiling and the roof of the car. A flexible shaft connects the motor with the paddle fans and compensates for any unevenness in the headlining of the car or the vibration of the fixture.

Contained in the art glass bowl, are four mirror reflectors, designed to direct the maximum rays of the electric lamps at the proper angle to the ceiling. It is obvious that to obtain the best efficiency the ceilings must have a light color. If the paddle fans are not required, they can be removed and stored away, until they are again needed.



Electric Fixture Combining Indirect Lighting and Paddle Fan.

Indirect lighting has been successfully developed by The Safety Car Heating & Lighting Company, and this fixture is another development along this line. A duplicate of the fixture without the paddle fans is exhibited by this company at its booth, and although no provision has been made to demonstrate the effectiveness of the lighting from it, an opportunity is afforded for those interested to gain an idea of the appearance of such a lamp.

LIST OF EXHIBITORS.

Notwithstanding the fact that 7,400 sq. ft. additional exhibit space was available this year as compared with last year, between 75 and 100 applicants for space could not be accommodated, and applications are still coming in. There are 262 exhibitors this year, using a total of 83,507 sq. ft. of space, as against 245 exhibitors, with 76,110 sq. ft. of space, in 1911, and 228 exhibitors, with 71,453 sq. ft. of space, in 1910. The average numbers of square feet to the exhibitor during this period were 313, 310 and 319, respectively. It is reasonably certain that if one-third more space were available for exhibits it would all be used.

The increased space this year was obtained by an extension of 4,860 sq. ft. on Machinery Hall, and by adding a new steel and wood arched structure to the Hotel Men's Annex, giving it a total of 11,283 sq. ft., an increase of 2,537 sq. ft. Some improvements have also been made in the Convention Hall. The decorations are more profuse, but otherwise similar to preceding years.

The Railway Supply Manufacturers' Association this year has installed, with the aid of the local electric light company, the generating set supplying power for the pier. New boilers were installed, and it is expected that ample power can be furnished for every need.

Acme Supply Company, Chicago Ill.—Vestibule diaphragms; vestibule curtains; diaphragm attachments; weatherproof windows; interior car curtains; steel doors; steel ladders; Chanarch car flooring; weatherproof window posts. Represented by H. H. Schroyer, T. K. Dunbar and C. R. Jamison. Space 572, 573.

Ajax Manufacturing Company, The, Cleveland, Ohio.—Ajax scrap reclaiming rolls and forgings produced on Ajax forging machines. Represented by John R. Blakeslee, A. L. Guilford and J. A. Murray. Space 113, 115, 117.

Alcohol Heating & Lighting Company, Chicago Ill.—Alcohol heater refrigerator car; models alcohol heater car; several types of alcohol portable stove. Represented by Herbert Green

materials used in manufacture of feralun; feralun heat resistant castings. Test plates showing comparison of feralun and iron. Fire door liner; grate bar; feralun abrasion resistant castings; section of ash or sand conveying pipe; sections of wearing plates; mounted section spiral conveyor. Photographs. Feralun anti-slip thread surfaces' devices. Represented by J. P. Warfle. Space 634.

American Arch Company, New York, N. Y.—Model of a locomotive boiler equipped with the American Security Arch; various types of locomotive fire brick. Represented by Le Grand Parish, J. P. Neff, Geo. Magstaff and John Nicholson. Space 412, 414.

American Balance Valve Company, The, Jersey Shore, Pa.—Wilson-Stevens valve gear with Jack Wilson high pressure internal admission slide valve. Walcheart valve gear with semi-plug piston valve. Full size semi-plug piston valves for superheat and saturated steam. Models of semi-plug piston valves; Jack Wilson valves for superheat and saturated steam and American balance slide valves. Represented by J. T. Wilson, Frank Trump and C. C. Young. Space 383.

American Brake Company, The, St. Louis, Mo.—Westinghouse booth. Represented by E. L. Adreon and R. E. Adreon. Space 19, 21, 23, 25, 27, 29.

American Brake Shoe & Foundry Company, Mahwah, New Jersey.—Brake shoes for locomotives; passenger and freight equipment and electric railway equipment. Brake heads and keys. Represented by F. W. Sargent, W. S. McGowan, W. G. Pearce, J. B. Terbell, F. L. Gordon, J. S. Thompson, E. L. Janes, E. B. Smith, George Law, J. V. Hogan, R. M. Brower, J. R. Haywood and R. E. Holt. Space 416.

American Brass Company, The, Coe Brass Company Branch, Ansonia, Conn.—Extruded and pressed brass shapes for car trimmings. Represented by Chas. E. Van Riper, Wm. H. Rippere, R. S. Wildman and Wm. W. Cotter. Space 518.

American Car and Foundry Company, New York, N. Y.—Reception booth. Represented by B. M. Carr, C. A. Liddle, Scott H. Blewett, S. M. Dolan, L. W. Martin, Wm. C. Dickerman, John McE. Ames, A. E. Ostrander, C. D. Eaton and E. H. Fisher. Space 619.

American Infusion Steel Process Company, New York, N. Y.—A process for converting a low grade steel into a high grade steel. Represented by W. C. Whyte, A. J. Thompson, R. C. Longenecker and V. J. Thompson. Space 172.

American Locomotive Company, New York, N. Y.—Reception booth. Represented by H. F. Ball, G. M. Basford, J. D. Sawyer, C. J. Donahue, W. L. Reid, W. P. Steele, H. B. Hunt, J. E. Dixon and C. M. Muchnic.

American Mason Safety Tread Company, Boston, Mass.—Mason safety treads, lead filled; Empire safety treads, carborundum filled; Stanwood treads, for car steps; Karbolith composition flooring. Represented by Henry C. King, L. H. Myrick and R. C. Davison. Space 609.

American Nut & Bolt Fastener Company, Pittsburgh, Pa.—Bartley nut and bolt fasteners, Bartley self-locking nut and bolt fasteners. Represented by Edwin M. White, Christopher Murphy, Robert Spencer and Jos. R. Royston. Space 310.

American Pulley Company, Philadelphia, Pa.—Axle pulley for electric lighting on steam railroad cars. Represented by Morris W. Rudderow. Space 401.

American Roll Gold Leaf Company, Providence, R. I.—Roll gold leaf; roll aluminum leaf and gold florentine metal leaf. Represented by T. J. Lawler, C. H. Bowers and C. E. Smith. Space 631.

American Steel Foundries, Chicago, Ill.—Cast steel products: Vulcan cast steel side frames; Vulcan cast steel brake beams; Samson bolster; Simplex couplers; Hercules and Ajax brake beams; Susemihl roller side bearings; Davis wheels; springs and miscellaneous castings. Represented by R. P. Lamont, Geo. E. Scott, R. H. Ripley, W. J. Lynch, J. C. Davis, T. D. Kelley, J. V. Bell, G. F. Slaughter, W. Ross Gravener, Geo. C. Murray, Theodore Cook, P. J. Kalman, D. T. Harris, J. W. Dalman, A. R. Bruner, W. A. Blanchard, A. S. Crozier, T. H. Hopkirk, W. M. Rogovine, R. E. Janney, Geo. G. Floyd, F. B. Ernst and Louis E. Jones. Spaces 185, 186.

American Tool Work Company, Cincinnati, Ohio.—One 24" x 12" geared head lathe driven by 15 H. P. General Electric motor; one 16" x 8' relieving lathe driven by Crocker-Wheeler motor; one 2' geared radial drill driven by 3 H. P. Westinghouse motor; one 3' sensitive radiator driven by 2½ H. P. G. E. motor; one 6' plain radial driven by 20 H. P. Westinghouse motor; one 16" shaper with a universal table and vise; one 24" shaper driven by 7½ H. P. Reliance motor. Numerous details of machines shown. Represented by Robert S. Alter, C. K. Cairns, Herman Schatz and Edward Connors. Spaces 103, 105, 107, 109, 111.

American Vanadium Company, Pittsburgh, Pa.—Vanadium steel, iron, brass and bronze locomotive parts; vanadium steel forgings and castings, vanadium tool steels, vanadium ores and vanadium alloys. Represented by J. J. Flannery, W. A. Bonitz,

- D. B. Browne, C. L. Hastings, W. J. Bird, P. A. Bevan and G. L. Norris. Space 211.
- Anchor Packing Company, Philadelphia, Pa.—Packing and mechanical rubber goods. Represented by L. F. Adams, G. A. Morrison, E. C. Adams, W. P. Haggart, J. D. Maguire, H. M. Green, J. F. Edmonds, C. M. Barnes and B. J. Miller. Space 378.
- Automatic Ventilator Company, New York, N. Y.—Miniature working models of the "Automatic" car ventilator, models of several types of self-acting intake-and-exhaust car ventilators, including those meeting requirements of the postal department, as per recent specifications for railway postal cars. Represented by George H. Ford, Frank A. Barbey and Wm. J. Fleming, Jr. Space 329.
- Baker Brothers, Toledo, Ohio.—One 1 in. by 6 in. Automatic Drilling Machine for rapid manufacturing production. Represented by Geo. E. Hallenbeck, H. M. Chilcote and W. W. Elliott. Space 140.
- Baker Car Heater Company, W. C., Detroit, Mich.—One No. 9 steel shell fire proof heater, one No. 1-C hot water heater, one No. 3-P forced ventilation hot air heater, one No. 3-K electric forced ventilation hot air heater. Represented by E. J. Smith, D. W. Smith and H. S. Williams. Space 214.
- Baldwin Locomotive Works, Philadelphia, Pa.—Pneumatic power reverse gear for locomotives. Represented by S. M. Vaulain, C. Greenough and A. S. Goble. Space 300.
- Barco Brass & Joint Company, Chicago, Ill.—Barco Flexible Joints for steam, air, oil and water; engine-tender steam, air and oil connections; round-house blower sets. One complete engine tender flexible joint equipment, including steam line, train line, signal line and tender brakes so arranged as to show every angle of movement required by the engine and tender. Represented by F. N. Bard and E. S. Nelson. Space 374.
- Baush Machine Tool Company, Springfield, Mass.—One hydro-pneumatic radial drill in operation; General Electric Co. automatic air compressor furnishing air. Represented by C. K. Lassiter, F. E. Becorselski, J. A. Eden and Chas. A. Smith. Space 119.
- Berry Brothers, Limited, Detroit, Mich.—Varnish panels, varnish gums, shellacs, japans, locomotive block, jacket enamels, front end finishes, railway varnishes. Represented by J. S. Stevenson, D. W. H. Moreland, John S. Wilson, F. W. Grebe and Walter Page. Space 364, 356.
- Best, W. N., New York, N. Y.—Oil burners, oil furnaces, oil regulating cocks. Represented by W. N. Best. Space 308.
- Best Manufacturing Company, Pittsburgh, Pa.—Best gate valves, iron, steel and brass, globe valves, flanged fittings, flanges, bends and pipe joints, flexible joints, stand pipes, Gulland stand pipe valves. Represented by H. W. Evans, C. W. Bergen, C. E. Hague and George Best. Space 380.
- Bethlehem Steel Company, South Bethlehem, Pa.—Tool steels; Bethlehem structural steel shops; standard high speed steel tools developed by Taylor-White; drop forgings; steel, iron and brass castings; staybolt iron; alternating stress testing machines in operation; Bristol critical point furnace in operation; staybolt vibratory machine in operation; metallographic instruments in operation; vail sections; forged steel hydraulic jacks. Represented by W. C. Cutler, Geo. W. Costello, J. M. Price, John Moran and Hugh Lennón. Space 37.
- Bettendorf Axle Company, Bettendorf, Iowa.—One single center sill, 50-ton capacity, 40'-0" underframe with trucks as furnished for the Harriman lines box cars. One double center sill 40-ton capacity, 40'-0", box car underframe. One assembled truck which will be used for demonstrating the ease with which the Bettendorf truck can be dismantled and assembled. One variable load brake truck. Represented by J. W. Bettendorf, M. Bettendorf, J. H. Bendixen, G. N. Caleb, F. K. Shults, A. F. Macpherson, E. E. Silk, W. G. Ransom, C. G. Stolpe and J. L. Goddard. Space 200.
- Blackall, R. H., Pittsburgh, Pa.—H-R ratchet brake lever for both freight and passenger cars. Improved lindstrom hand brake lever for both freight and passenger cars. Represented by R. H. Blackall. Space 614.
- Boss Nut Company, Chicago, Ill.—Boss nut locks. Represented by J. T. Benedict, J. A. MacLean and Ed. Wilhelm. Space 368, 369.
- Bowser & Company, Inc., S. F., Ft. Wayne, Ind.—Standard self measuring oil pumps; one tank and oil pump combined; one paint oil outfit; one power pump; one automatic registering measure; one automobile filling station; one oil filtration and circulating. Represented by C. A. Dunkelberg, W. T. Simpson, Edward Barnes and F. T. Hyndman. Space 30.
- Brown Automatic Connector Company, Chattanooga, Tenn.—Brown automatic air, steam and signal connector; for use in railway passenger service; and air and signal connector, for use in freight service. Represented by M. A. Brown and A. L. Kirkpatrick. Space 306.
- Brunix Manufacturing Company, Philadelphia, Pa.—Journal box packing; wiping cloths. Represented by W. B. Howard. Space 212.
- Buckeye Steel Castings Company, The, Columbus, Ohio.—Complete cast steel 70-ton truck, truck bolsters, side frames, key connected yoke, journal boxes and couplers. Represented by S. P. Bush, J. C. Whitridge, Geo. Groobey, Geo. T. Johnson, A. H. Thomas and C. B. Goodspeed. Space 603, 605.
- Buffalo Brake Beam Company, New York, N. Y.—High speed passenger brake beams. Automatically adjustable brake heads, truss and solid brake beams for all classes of cars, locomotives and electric equipment. Represented by S. A. Crone, Edwin Strassburger, Thomas E. Carliss, Roland C. Fraser, O. W. Meissner and C. E. Barrett. Space 606.
- Bullard Machine Tool Company, The, Bridgeport, Conn.—One 42" vertical turret lathe, in operation, driven by Westinghouse motor. Represented by S. H. Bullard, J. W. Bray, R. H. Snider, F. B. Smith and W. B. Price. Space 125, 127.
- Buyers' Index Company, Chicago, Ill.—Railway supply index-catalogue and purchasing agents' buying list. Represented by N. F. Rehm, H. E. Frame and Alex Smith. Space 628.
- Cambria Steel Company, Johnstown, Pa.—Cambria special axles; "Coffin Process" axles; 100% rail joints; Morrison guard rails. Represented by J. Leonard Refogle, Ralph V. Sage, W. S. Ottinger, L. B. Morris, E. H. Bankard, Jr., M. G. Baker. Space 506, 508.
- Camel Company, Chicago, Ill.—Models of improved Security car doors; Camel I-beam carlines. Represented by P. M. Elliott, J. M. Hopkins, W. W. Darrow and J. F. Comee. Space 565.
- Carborundum Company, The, Niagara Falls, N. Y.—Carborundum and Aloxite wheels, Aloxite cloth, garnet paper and carborundum safety devices. Represented by C. C. Schumaker, W. W. Sanderson, C. C. Lathrop, R. H. Hogg, J. F. Hanlon and R. S. Marvin. Space 149, 151.
- Carey & Company, Philip, Cincinnati, Ohio.—Asbestos and magnesia material for railway use. Represented by D. R. Warfield. Space 564.
- Carnegie Steel Company, Pittsburgh, Pa.—Solid rolled steel wheels for passenger train, locomotive and freight car service; slick gear blank and cut gear for motors; bent Carnegie toughened freight car axle; vanadium steel locomotive spring, axle and test pieces; steel sheet piling; concrete reinforcement bars; nickel-plated sections structural, rail and bar mill shapes; transparencies illustrating process of steel manufacture. Represented by John C. Neale, W. G. Clyde, R. B. Woodworth, H. W. Maxson, N. B. Trist, T. W. Williams, Frank Spencer, V. S. Yarnall, G. F. Goddard, K. E. Porter, C. B. Friday, John Hornbrook, W. N. Jeffress, C. F. W. Rys, I. W. Jenks, Lee Bowman, L. C. Bihler and Charles Orchard. Space 418, 546, 547.
- Carter Iron Company, Pittsburgh, Pa.—Chain iron; chains; staybolts and engine bolts; physical tests of the raw material. Represented by H. H. Carter and Henry Gilg. Space 36.
- Chase & Company, L. C., Boston, Mass.—Car seat coverings. Goat brand plain mohair plush, frieze plush, friezette and Chase leather. Represented by W. P. Underhill and H. C. Hopewell. Space 10.
- Chicago Car Door Company, Chicago, Ill.—Car doors, safety brackets. Represented by J. L. Mallory and H. M. Perry. Space 539.
- Chicago Car Heating Company, Chicago, Ill.—Vapor system car heating devices; steam hose couplers; steam valves. Represented by Egbert H. Gold, Edward A. Schreiber, B. A. Keeler, F. F. Coggin, G. T. Cooke, R. P. Cooley, E. E. Smith, Jos. Vogel and J. E. Buker. Space 218, 220, 222, 224, 226.
- Chicago Pneumatic Tool Company, Chicago, Ill.—Pneumatic and electric tools. Represented by C. E. Walker, J. C. Campbell, M. O'Connor, T. G. Smallwood, J. W. McCabe, W. F. Delaney, C. B. Coates, E. Aplin, A. C. Andresen, Thos. Aldcorn, W. O. Duntley, G. A. Rees and J. F. Duntley. Space 618.
- Chicago Railway Equipment Company, Chicago, Ill.—Brake beams of the "PC" Creco, "EL" Creco, Diamond Special, Diamond, Drexel, National Hollow, Kewanee, Reliance, Sterlingworth, Ninety-six, Monarch, and special types. Monitor bolsters; Creco roller side bearings; brake slack adjuster; journal box and lid; automatically adjustable brake head; removable leg brake head; Creco sliding third point support and safety device; reversible and duplex brake beam struts. Represented by E. B. Leigh, Arthur Wyman, F. T. De Long, Raymond H. Pilson, G. N. VanSweringen, C. P. Williams, Edwin F. Leigh, Ralph M. Wiggins, Chas. A. Maher and C. H. Williams, Jr. Space 635.
- Chicago Steel Car Company, Chicago, Ill.—Model of steel underframe and two styles of friction draft gears. Represented by H. C. Priebe. Space 520.
- Chicago Varnish Company, Chicago, Ill.—Finished panels showing "Ce-Ve" process of painting cars. Represented by George

- S. Bigelow, F. L. Olds, Fred J. Gundrum, Jr., and R. K. Buckman, Jr. Space 576, 577.
- Chisholm & Moore Manufacturing Company, The, Cleveland, Ohio.—Chain hoists, I-beam trolleys. Represented by H. E. Dickerman. Space 158.
- Coe Manufacturing Company, W. H., Providence, R. I.—Coe's ribbon gold leaf and Coe's gilding wheels. Represented by Benjamin A. Smith, E. J. Arlein and S. H. Swallow. Space 633.
- Collins Metallic Packing Company, Philadelphia, Pa.—Working model of locomotive driver wheel flange lubricators. Represented by J. George Wholey.
- Colonial Steel Company, Pittsburgh, Pa.—Illuminated photographs showing the manufacturing of steel; samples of different tools made from Colonial steel; samples of various alloys used in making steel. Represented by Chas. M. Brown and E. P. Fitzgerald. Space 367.
- Commercial Acetylene Company, The, New York, N. Y.—Railroad car lighting by acetylene; Locomotive headlighting by acetylene, signal lighting by acetylene, marker, gauge and cab lights by acetylene; buoy lantern with sun valve and flasher, commercial acetylene tanks for oxy-acetylene welding, commercial acetylene tank cut open showing asbestos packing. Represented by Oscar F. Ostby, Harry G. Doran and Roger J. Faure. Space 339.
- Commonwealth Steel Company, St. Louis, Mo.—Photographs, drawings and catalogues showing the followings devices: Combined platforms and double body bolsters for passenger train cars, upright end frame in conjunction with combined double body bolster and platform, double body bolster, four and six-wheel trucks for passenger-train cars, needle beams, end sills, truck center bolsters, truck center frames, locomotive pilot beams, Davis driving wheels, engine and tender trucks, tender bumpers, tender frames, Commonwealth transom draft gear, separable body bolsters, flory carry iron and striking plate. Represented by H. M. Pfleger, Geo. E. Howard, Boone V. H. Johnson and Blake C. Howard. Space 313, 315.
- Consolidated Car-Heating Company, New York, N. Y.—Pressure traps, vapor traps, steam couplers, end valves, admission valves, Thermostat, electric heaters, switches, resistances. Represented by Cornell S. Hawley, C. C. Nuckols, Thomas Farmer, Jr., W. S. Hammond, Jr., Butler Keys and H. L. Hawley. Space 582, 583.
- Consolidated Railway Electric Lighting & Equipment Company, New York, N. Y.—Axle light equipment complete, new type "L" regulator with type "D" dynamo demonstrating while running under all conditions of train speed and lamp load. Represented by P. Kennedy, J. L. Watson, L. J. Kennedy, Thomas L. Mount, D. N. Balderston and J. A. Misland. Space 614.
- Crane Company, Chicago, Ill.—Crane locomotive safety valves, special railroad fittings, quick opening locomotive blower valves, locomotive blow-off valves, locomotive cab valves, automatic stop and check valves, special valves for creosote wood preserving plants, steel valves and fittings for superheated steam, Crane tilt steam traps, hydraulic valves, special assortment of brass globe and angle valves for railroad service, gate valves. Represented by F. D. Fenn and G. S. Turner. Space 586, 588.
- Crosby Steam Gage & Valve Company, Boston, Mass.—Special locomotive steam gauges; improved locomotive pop-valves; the Lanza continuous diagram appliance for indicators; the number 2 fluid pressure scales for testing gauges up to 30,000 pounds; hydraulic press recorder with continuous chart; air pump throttle valve. Represented by M. D. Johnson and Philip Johnson. Space 630.
- Crucible Steel Company of America, Pittsburgh, Pa.—Steel products. Represented by F. Baskerville, J. T. Stafford and W. K. Krepps. Space 636.
- Curtain Supply Company, Chicago, Ill.—Ring No. 88 fixtures, "Rex" all metal rollers, curtain materials, friction rollers, vestibule curtain rollers, reinforced vestibule curtain rollers, steel vestibule curtain rollers, steel sash balance, "CSCO" diaphragms, opening pleat diaphragms, No. 6 roller bearing hook, No. 10 automatic release handles, No. 10 automatic vestibule curtain release handles. Represented by W. H. Forsyth, R. F. Hayes, S. W. Midgley, Geo. E. Fox and F. M. Egolf. Space 638.
- Damascus Brake Beam Company, The, Cleveland, Ohio.—High speed passenger beams; freight beams of both solid and truss type; adjustable brake heads; forged steel fulcrums; freight car ladders. Represented by Albert Waycott and W. H. Winterrowd. Space 602.
- Davis Boring Tool Company, St. Louis, Mo.—Full line of the Davis expansion boring tools. Represented by E. E. Davis, J. W. McKeen, Harry Marsh and Walter E. Moberley. Space 150.
- Davis-Bournonville Company, New York, N. Y.—Oxy-acetylene welding and cutting apparatus; complete welding and cutting equipment; acetylene and oxygen generating and compressing plants. Represented by Augustine Davis, W. R. Noxon, H. L. Adams, Wm. W. Barnes, Wm. Joyce, Louis Shepard, W. C. Buckman and Alex. Blaser. Space, pier end, 1, 2.
- Davis Solid Truss Brake Beam Company, Wilmington, Del.—Davis solid truss brake beams; solid steel brake shoe backs; Universal air brake combined auxiliary reservoir and cylinder; brake beam deflectometer and special appliance for testing brake beams; interlocking metal ladders for freight cars; rolling center support for brake beams. Represented by Nathan H. Davis and Thomas C. Davis. Space 500, 502, 504.
- Dearborn Drug and Chemical Works, Chicago, Ill.—Reception Booth. Represented by Robert F. Carr, George R. Carr, Grant W. Spear, J. D. Purcell and H. G. McConaughy. Space 6, 8.
- Deforest Sheet & Tin Plate Company, Niles, Ohio.—Lohmannized products and Deforest convolute reinforcement. Represented by Edward D. Thompson and Wade A. Taylor. Space 325.
- Detroit Lubricator Company, Detroit, Mich.—No. 0 one feed Bullseye Locomotive Lubricators, No. 5 one feed, No. 11 two feed, No. 22 three feed, No. 22 sectional, No. 32 four feed, No. 42 five feed, No. 52 six feed, No. 62 seven feed, No. 72 eight feed. Half pint air brake lubricator; flange lubricator; one, two, three and four feed air cylinder lubricator, complete with emergency and throttle valve and check valve connection. "T," steam chest plugs, angle and straight; locomotive road cup; locomotive guide cup; Pendry throttle valve; boiler valve; mechanical force feed oiler for motors on section cars. Complete line of all models, sizes and finishes of stationary accessories. Represented by F. W. Hodges, H. I. Lord, A. D. Howard and Geo. Cage. Space 637.
- Dickinson, Paul, Incorporated, Chicago, Ill.—Dickinson cast iron smoke jacks; cast iron adjustable chimneys; Æolus ventilators in galvanized iron and copper; drawings of standard round house construction. Represented by A. J. Filkins and J. A. Meaden. Space 213.
- Dieter Nut Company, New York, N. Y.—Lock nuts. Space 4.
- Dixon Crucible Company, Jos., Jersey City, N. J.—Graphite products for railway use, including lubricating graphite, graphite paint, locomotive front end preparations, graphite crucibles and general railway supplies. Represented by L. H. Snyder, H. A. Nealley, H. W. Chase, John Tucker and William Houston. Space 24.
- Dressel Railway Lamp Works, New York, N. Y.—High candle power headlights; combination oil and electric engine lamps; tail lamps; platform marker lamps; automatic caboose lamps; electric, acetylene and oil gage lamps; cab card holders. Represented by F. W. Dressel, Robert Black, H. S. Hoskinson, E. W. Hodgkins, P. P. Claiborne, F. Dressel and F. W. Edmunds. Spaces 384, 385.
- Duff Manufacturing Company, The, Pittsburgh, Pa.—Barrett track jacks and automatic lowering jacks; Duff ball bearing screw jacks and the Duff-Bethlehem forged steel hydraulic jacks. Represented by Edw. A. Johnson and Carl A. Methfessel. Space 584, 585.
- Duntley Pneumatic Tool Company, Chicago, Ill.—Chippers; riveters and air drills. Represented by J. W. Duntley, Harry Keller and P. H. Gilleland. Space 152.
- Dupont de Nemours Powder Company, E. I., Wilmington, Del.—"Fabricoid," an artificial leather for coach curtains and seats. Represented by C. Hallock Silkman and H. W. Wivel. Space 331.
- Durbin Automatic Train Pipe Connector Company, St. Louis, Mo.—Automatic air and steam hose coupling and train telephone system. Automatic safety car coupler. Represented by V. S. Durbin, J. F. Blackburn, A. H. Burchard and J. F. Durbin. Space 309, 311.
- Eagle Glass & Manufacturing Company, Wellsburg, W. Va.—Locomotive oil cans; bench oilers; shop torches; locomotive torches; locomotive tallow pots; tank buckets; supply cans; grease and dope buckets; cement buckets; wrecking torches, etc. Represented by J. L. Fusner and S. O. Paull. Space 600.
- E. D. E. Company, Chicago, Ill.—Insulation for refrigerator cars, passenger cars and ice houses; ventilator for refrigerator car; grain door; track insulation for steam and electric roads; car stopper; thermometer well for refrigerator car. Represented by Frank M. Gilmore. Space 11.
- Edison Storage Battery Company, Orange, N. J.—Five exhibition boards showing the assembly and parts of the various sized cells made by this company; car lighting battery equipment; short circuit test on a fully charged Edison battery. Represented by W. G. Bee, R. Bachman, H. G. Thompson, T. V. McGinnis and O. R. Hildebrand. Spaces 625, 627.
- Edwards Company, The O. M., Syracuse, N. Y.—Window fixtures; extension platform trap doors; all metal shade rollers; all metal sash balances; padlocks. Represented by O. M.

- Edwards, C. H. Rockwell, E. F. Chaffe, W. C. Bradbury, T. P. O'Brian and Roy T. Axe. Space 521, 523.
- Electric Controller and Manufacturing Company, Cleveland, Ohio.—Lifting magnet in operation; automatic motor starters in operation; float switches and pressure gauges; automatic machine tool controllers in operation; type Q electric brakes; crane controllers; circuit breakers; magnetic switches; protective panels. Represented by R. G. Widdows, C. S. Dauler, W. C. Jackson and E. C. Ryan. Space 178.
- Electric Storage Battery Company, Philadelphia, Pa.—Storage batteries for car lighting, signal, automobile and ignition service. Represented by H. E. Hunt, D. P. Orcutt, Frank Kalas and J. R. Williams. Space 401.
- Emery Pneumatic Lubricator Company, The, St. Louis, Mo.—Emery brake cylinder lubricant; Emery pneumatic lubricators for air brake equipment on locomotive and passenger cars. Represented by E. A. Emery, N. J. McAloney and Alex. Steiner. Space 626.
- Enterprise Railway Equipment Company, Chicago, Ill.—Side dump hopper car; bottom dump ore car; bottom dump coal and coke car; side and center dump ballast car; center dump hopper coal car; bottom dump duplex hopper coal car. All 50-ton capacity. Represented by Argyle Campbell. Space on exhibit track.
- Fairbanks Company, The, New York, N. Y.—Railroad track scales; platform scales; valves; dart unions and flangers. Represented by L. B. Mann, F. Mattern and F. Boraeson. Space 525.
- Fairbanks-Morse & Company, Chicago, Ill.—Sectionalized No. 32 gasoline section motor car. Represented by A. A. Taylor, E. M. Fisher, C. T. Fugitt, W. W. Adams and F. H. Douglas. Space 584, 585.
- Flannery Bolt Company, Pittsburgh, Penna.—Tate flexible staybolts; Tate adjustable crown stays; tools for applying Tate staybolts; "F. B. C." arch bar nut locks. Represented by J. Rogers Flannery, Jas. J. Flannery, Wm. M. Wilson, B. E. D. Stafford, Thos. R. Davis and Geo. E. Howard. Space 540, 542.
- Forged Steel Wheel Company, New York, N. Y.—Forged Steel wheels. Represented by J. M. Hanson, J. B. Brady, R. L. Gordon, Wm. Libkemann, J. P. Rapp, H. G. Macdonald, J. E. Bradley, E. S. Keith and Howard Carlton. Space 28.
- Forsyth Brothers Company, Chicago, Ill.—Various metal formations, including unit-sections for sides of cars; metal sash and doors; sash attachments and safety deck sash ratchets; cast steel yokes, with key connection, also drawbar radical and centering devices; high capacity buffing device and draft gears. Represented by George H. Forsyth, A. H. Sisson, Wm. Wampler and E. S. Taylor. Space 601, 545.
- Ft. Pitt Malleable Iron Company, Pittsburgh, Pa.—Malleable iron castings. Represented by Frank J. Lanahan. Space 629.
- Foster Company, The Walter H., New York, N. Y.—General selling agents for machine tools. Represented by Walter H. Foster and Herbert R. Kenah. Space 119-121.
- Franklin Manufacturing Company, The, Franklin, Pa.—Franklin 85 per cent. magnesia boiler lagging and coverings and cements; asbestos supplies of all natures for railroad use; Franklin asbestos lumber smoke jacks. Asbestos "Carline," cotton and wool waste; perfection journal box packing; asbestos shingles, sheathing and corrugated. Represented by R. J. Evans, H. S. Hayden, L. B. Melville, E. R. Rayburn and H. S. Hayward. Space 26.
- Franklin Railway Supply Company, New York, N. Y.—Franklin automatic fire door; grate shaker; flexible joint, between cars; water joint; flexible metallic roof. Represented by J. S. Coffin, S. G. Allen, R. G. Colburn, W. L. Allison, C. L. Winey, W. H. Coyle and J. L. Mohun. Space 412, 414.
- Frost Railway Supply Company, The, Detroit, Mich.—Harvey friction spring gears; Detroit Metal Weather Strip. Represented by Harry W. Frost, George L. Harvey and George A. Cooper. Space 558.
- Galena-Signal Oil Company, Franklin, Pa.—Reception Booth. Represented by E. H. Baker, W. A. Trubee, Geo. L. Morton, Wm. Holmes, W. J. Walsh, J. E. Hall, B. H. Grundy, C. C. Steinbrenner, E. V. Sedgwick, H. Hillyer, W. E. Augur, W. W. Breckenridge, W. E. Brumble, J. W. Bunn, J. A. Graham, E. W. Grieves, G. E. McVicar, W. E. Maher, A. V. Manchester, R. F. Menefee, C. G. Melvin, L. H. Palmer, W. O. Taylor, W. J. Vance and A. B. Wright. Space 38.
- Garlock Packing Company, The, Palmyra, N. Y.—Throttle and air pump packings; superheat sheet packing; special packings for accumulators, compressors and general shop purposes. Represented by H. N. Winner, J. P. Landreth, T. P. Dunham, J. F. Franey and C. W. Brennan. Space 510.
- General Electric Company, Schenectady, N. Y.—Motors, air compressor, controllers; rheostats; breast drills; steam and air flow meters; battery truck crane; ozonator; soldering irons; fans; headlights; arc lamps; 5 K. W. Curtis turbine; mercury arc rectifiers; cloth and steel pinions; ammeters; railway signal volt ammeter; cable display cabinet. Represented by J. G. Barry, C. E. Barry, W. B. Potter, A. W. Jones, J. W. Ham, C. D. Knight, Frank Rhea, R. E. Wooley, C. Fair, L. W. Shugg, R. A. Lewis, W. J. Clark, C. C. Pierce, W. O. Kellogg, C. A. Raymond, A. I. Totten, H. Schroeder and A. L. Broe. Space 350 to 363.
- General Railway Supply Company, Chicago, Ill.—Working models of railway passenger car devices. Metallic (steel) sheathing; National steel trap doors; Perfection sash balances; Resisto insulation; Imperial car window screens; Flex-olith composition flooring; National vestibule curtain catches; Eclipse deck sash ratchets; National standard roofing. Represented by H. U. Morton, W. L. Conwell, F. L. Wells, W. S. Humes and J. F. Oelerich. Space 570, 571.
- Gilbert & Barker Manufacturing Company, Springfield, Mass.—Storage tanks with measuring and non-measuring pumps for the storage of lubricating and heavy paint oils; portable gasoline tanks for garages; underground storage tanks with measuring and non-measuring pumps for public and private garages; and specialties used in the handling of gasoline and oils. Represented by H. C. Worrall. Space.
- Gold Car Heating & Lighting Company, New York, N. Y.—Gold's combination pressure and vapor system; straight vapor system; thermostatic temperature regulator; new ideal pressure regulator; cyclone ventilators; heat storage system for refrigerator cars; wedge lock steam hose couplers; electric heaters. Represented by Edward E. Gold, E. B. Wilson, A. B. Strange, F. A. Purdy, W. H. Stocks, A. D. Stuver, J. M. Stayman, George F. Ivers, F. H. Smith, E. J. Ronan, J. O. Brumbaugh, A. E. Robbins and F. O. Bailey. Space 301, 303, 305.
- Goldschmidt Thermit Company, New York, N. Y.—Thermit of various kinds and appliances; metals and alloys produced by the aluminothermic process; specimen pipe welds and apparatus for making same; motion pictures and transparencies to show the operations done by the Thermit process. Represented by Dr. Hans Goldschmidt, Wm. C. Cuntz, W. R. Hulbert, H. S. Mann, H. D. Kelley and J. G. McCarty. Space 333, 335.
- Gould Coupler Company, New York, N. Y.—Gould "Simplex" system of electric train lighting. "Z" type of couplers—standard and special; "Z" type tender couplers; locomotive spring buffer; Gould friction striking plate buffer; friction draft gear; top and bottom operative passenger couplers; Gould "Z" type truck bolsters; malleable iron journal boxes; Gould truck side frame. Represented by F. P. Huntley, Geo. G. Milne, Dr. C. W. Gould, Clarence E. Rood, Geo. S. Berger and W. F. Richards. Space 574, 575.
- Gould & Eberhardt, Newark, N. J.—One 24" new high power type, Eberhardt's patent double triple quick stroke shaper arranged with adjustable speed motor, with automatic electrical starting and braking device. One sectional frame and inside gearing of 16" shaper showing the interior construction. Represented by Fred L. Eberhardt, H. Ezra Eberhardt, Secretary and Chas. L. Cameron. Space 137.
- Greene, Tweed & Company, New York, N. Y.—Palmetto packing, round and square, for high steam pressures; Palmetto packing, twist, for small globe valves, etc.; Palmetto packing in sets for railroad service; Manhattan packing for low steam and hydraulic pressures. Favorite reversible ratchet wrench. Represented by F. E. Ransley and L. J. Van De Wall. Space 590.
- Greenlaw Manufacturing Company, The, Boston, Mass.—Flexible metallic hose for steam, air or oil between engine and tender, or between cars for steam and air. Flexible joints for roundhouse work and for car heating at terminals or car yards. Represented by H. A. Royce, W. A. Greenlaw and A. L. Greenlaw. Space 316, 318.
- Griffin Wheel Company, Chicago, Ill.—Car wheels. Represented by C. P. Dennett, C. K. Knickerbocker, H. N. Scott, W. A. Bennett and A. A. Hale. Spaces 165, 167.
- Grinden Art Metal Company, Brooklyn, N. Y.—Hollow steel car doors; cold drawn steel mouldings. Represented by Wm. J. Grinden and Frank V. Grinden. Space 308.
- Grip Nut Company, Chicago, Ill.—Grip nuts; monogram ladder fastenings; grip nut angle wrenches; grip holding nuts and metal dust guards. Represented by E. R. Hibbard, J. W. Hibbard, W. E. Sharp, W. G. Willcoxson, DeF. Lillis, Clifford Beaumont and Ben. Klein. Space 556, 557.
- Halcomb Steel Company, Syracuse, N. Y.—Samples of crucible and electric welded steels; specimens of chrome vanadium steel. Represented by Dr. John Mathews, Thomas J. Moore, Thomas J. Moore, Jr., and Elmer Titus. Space 323.
- Hale & Kilburn Company, Philadelphia, Pa.—Improved "Walk-over" car seats, parlor car chairs, reclining chairs for cars, steel

- car interior finish, steel doors for all kinds of steel cars, steel mouldings and car fittings. Represented by V. von Schlegell, R. H. Pilson, C. W. Laskay, J. G. Bower, I. Lubersky, A. F. Old, F. C. Edson and F. F. Robb. Space 408, 410.
- Hammett, H. G., Troy, N. Y.—Trojan metallic packing; Trojan bell ringers; Trojan grinding compound; triple valve bushing rollers. Represented by H. G. Hammett, E. C. Sawyer and A. O. Van Dervort. Space 365.
- Harrington, Son & Company, Inc., Edwin, Philadelphia, Pa.—Hand power traveling crane, geared and plain travelers on lower flange of I-beam, peerless spur geared hoist, improved screw hoist. Represented by W. J. Somerset, A. M. Harrington and Roger Sherron. Space 143, 145.
- Hartshorn Company, Stewart, Newark, N. J.—Spring rollers for car curtains, vestibules and sash balances. Represented by B. E. Bushnell. Space
- Hewitt, H. H., New York, N. Y.—One car truck, transom type, full size; one car truck, bolster type, full size; one engine tender truck, full size; also quarter-size models—one car truck, transom type; one car truck, bolster type; one engine tender truck, one six-wheel passenger truck. Represented by H. H. Hewitt, M. S. Paine, S. J. Sill and C. M. Bower. Space 179, 181, 183.
- Heywood Brothers and Wakefield Company, Wakefield, Mass.—Seats for railway coaches, including new type of pressed steel armrest, also seats for interurban and city cars. Represented by Bertram Berry, Scot Wade, C. W. H. Frederick and E. C. Lang. Space 624.
- Higley Machine Company, New York, N. Y.—No. 25 (28-in. blade) Higley cold metal saw. Represented by C. H. Hamersly. Space 147.
- Home Rubber Company, Trenton, N. J.—Rubber Mechanical Goods. Represented by A. R. Foley. Space 375.
- Hubbard & Company, Pittsburgh, Pa.—Railroad track tools, track shovels, locomotive scoops, pole line hardware, Pierce insulator pins and brackets, standard and special washers, steel stampings. Represented by John W. Hubbard, John J. Brooks and R. L. Mason. Space 402.
- Hunt Company, C. W., West New Brighton, N. Y.—Coal handling machinery, motion picture of cargo cranes, P. R. R. at Greenville, N. J.; automatic railway model, industrial railway, train of cars; coaling station model, gravity bucket conveyor model, hoisting and transmission rope, photos of coal-handling plants and machinery. Represented by A. C. Summers, J. Day Flack, J. P. Mewshaw and R. E. Bolter. Spaces 169, 171, 173, 175.
- Hunt-Spiller Manufacturing Corporation, South Boston, Mass.—Eccentrics, straps, driving boxes, shoes and wedges, crosshead shoes, guides, superheater headers, false valve seats, side rod bushings, cylinder packing, cylinder bushings, pistons, piston valve cages, piston valve packing, air pump cylinder bushings and packing, knuckle pin bushings. Represented by W. B. Leach, Frederick Parker, J. G. Platt, V. W. Ellet and J. M. Monroe. Space 560, 561.
- Illinois Steel Company, Chicago, Ill.—With Carnegie Steel Company. Spaces 418, 546, 547.
- Independent Pneumatic Tool Company, Chicago, Ill.—Thor pis-corner motors, air grinders, a new two-piece long stroke ton air drills, pneumatic hammers, stay bolt drivers, close-riveting hammer, electric drills. Represented by James B. Brady, W. O. Jacquette, John D. Hurley, F. W. Buchanan, R. S. Cooper, George A. Gallinger, R. T. Scott, J. J. Keefe, J. P. Bourke, T. J. Carroll, H. F. Finney, W. R. Gummere, H. H. Hendricks, W. A. Johnson, G. J. Lynch, F. J. Passino, V. W. Robinson, C. B. Ross and Geo. C. Wilson. Space 587, 589.
- Industrial Requirements Company, Philadelphia, Pa.—Leather material. Represented by E. Boyd Weitzel. Space 142.
- International Oxygen Company, New York, N. Y.—I. O. C. system generators for producing pure oxygen and hydrogen; Victor oxyhydrogen torches; Eycosee oxy-acetylene torches; Holder pressure acetylene generators; I. O. C. oxygen, hydrogen and acetylene regulating and reducing valves. Represented by E. W. Irwin, H. L. Barnitz, A. A. Heller and I. H. Levin. Space 307.
- Jacobs-Shupert U. S. Fire Box Company, The, Coatesville, Pa.—One Jacobs-Shupert fire box and back end complete with straight side sheets. One Jacobs-Shupert fire box and back end complete of the "O. G." type of side sheets. One Jacobs-Shupert fire box (inside shell only). Throat sheets fire box sections, stay sheets, etc., in their various stages of development. Samples of special flanging work. Represented by A. F. Huston, C. L. Huston, W. H. Hamilton, P. R. Baker, Mr. Goodfellow, C. Ducas, A. W. Whitford and C. H. Coleman. Space 180, 182.
- Jenkins Bros., New York, N. Y.—Brass, iron and steel valves of all types for power plants, railroad shops and equipment, heating and water systems. Sheet packing, pump valves and other mechanical rubber goods for railroad work. Represented by B. J. Neely, C. B. Yardley, Jr., and Alfred Engle. Space 610, 612.
- Jerguson Gage & Valve Company, Boston, Mass.—Locomotive gages. Represented by Geo. L. Huntress. Space 327.
- Jessop & Sons, Incorporated, William, New York, N. Y.—Specimens of Jessop's crucible steel; various grades and manufactured articles made from same. Represented by John E. Sandmeyer, O. H. Reynolds, E. M. Britton and T. S. Hanna.
- Johns-Manville Company, H. W., New York, N. Y.—Refrigerator and steel passenger car insulation; waterproofing and mastic samples; electrical materials; air pump packings; Vitribestus pipe coverings; high and low pressure pipe coverings; train pipe coverings; wool felt roofing; car roofing; asbestos roofing; throttle and steam hammer packings; Transite asbestos shingles; smoke jack; ebony asbestos wood; ventilators; fire resisting cements; asbestos car sill covering; friction tapes and splicing compounds; packings; gaskets; diaphragm canopy covers; locomotive laggings; indurated fibre conduit for electric wiring; Sanitor toilet seats. Represented by J. E. Meek, G. A. Nicol, C. W. Gearhart, J. H. Trent, F. J. Horne, J. C. Younglove, H. G. Newman, C. E. Murphy, P. C. Jacobs and G. Christenson. Space 580, 581.
- Joliet Railway Supply Company, Chicago, Ill.—"Huntoon brake beams," standard M. C. B. No. 1 and No. 2 freight beams; standard passenger and tender beams and beams for "high speed" and P. C. air brake equipment. Perry roller side bearings for passenger, freight and interurban cars and locomotives. Perry-Hartman self-centering anti-friction radial truck. Represented by E. A. Laughlin, A. G. Bancroft, Jos. D. Granville and Jos. F. Leonard. Space 541, 543.
- Jones & Laughlin Steel Company, Pittsburgh, Pa.—Open hearth and Bessemer steel, rounds, flats, squares, hexagons, bars, plates, etc. Steel sheet piling; power transmission machinery; cold rolled steel shafting; concrete reinforcing bars; chains; steel wire nails; tinplate; barbed wire; various wire products, including screw stock, railroad spikes, light rails and connections. Structural steel, beams, angles, channels. Represented by J. K. Barker, C. S. Bradley, G. C. Fogwell, Robert Geddis, Roland Gerry, T. C. Ham, H. F. Holloway, R. M. Kilgore, A. B. Marble, George B. Mitchell, W. T. Mossman, A. C. Pollock and Frank S. Slocum. Space 407.
- Joyce-Cridland Company, The, Dayton, Ohio.—Jacks. Represented by Geo. M. Llewellyn, Chas. D. Derby, P. J. Ford and W. Irving Clark. Space 524, 526.
- Keyoke Railway Equipment Company, Chicago, Ill.—Space 321.
- Keystone Drop Forge Works, Chester, Pa.—Keystone connecting links; Keystone safety shackle hooks. A full line of standard and special drop forgings. Represented by Geo. H. Berlin, Chas. F. H. MacLaughlin and Wm. J. McDevitt. Space 512.
- Keystone Lubricating Company, Philadelphia, Pa.—Keystone locomotive journal box; various densities; Keystone grease. Represented by A. C. Buzby, H. A. Buzby, W. F. Buzby, W. E. Harrington, T. O. Organ, C. A. Hopper and J. T. Butler. Space 154, 156.
- Knight Pneumatic Sander Company, Huntington, Ind.—Sanders for locomotives and interurban equipment. Represented by R. G. Mitchell and Daniel Shaeff. Space 632.
- Landis Machine Company, Waynesboro, Penna.—1½" double head motor driven bolt cutter; 2" double head motor driven bolt cutter with lead screw; automatic die heads for turret lathes and screw machine; solid adjustable die heads for screw machines; pipe die heads for pipe threading machines; different styles and types of dies; samples of threaded product. Represented by H. L. Fisher, Ira D. Grove, Carl F. Meyer and J. W. Willis. Space 123.
- Lehon Company, The, Chicago, Ill.—Roofing and insulating papers. Represented by Thomas Lehon. Space 18.
- Locomotive Improvement Company, The, Clinton, Iowa.—Full sized driving box, showing Markel's removable driving box, brass and lateral motion plates; model showing flangeless shoes and wedges; models showing solid head rod, front and back ends; drawing of rod, full sized. Represented by L. W. Barker and E. J. Fuller. Space 13.
- Locomotive Superheater Company, New York, N. Y.—Model of Schmidt top header type superheater. Model showing method of setting superheater flues in boiler. Model of superheater unit. Represented by Simon Hoffmann, George L. Bourne, Gilbert E. Ryder and William Boughton. Space 412, 414.
- Lucas Machine Tool Company, Cleveland, Ohio.—No. 33 "Precision horizontal boring, drilling and milling machine. Represented by W. L. Cheney and J. A. Leighton, Jr. Space 106.
- Lunkenheimer Company, The, Cincinnati, Ohio.—Regrinding, renewo, ferrenewo, globe, angle and cross valves; iron body, puddled semi-steel, crucible cast steel globe angle and cross valves; non-return boiler stop valves; victor gate valves; pop

- valves; lubricators; stop cocks, etc. Represented by Lane Thompson and Elmer Ritter. Space 532, 534.
- McConway & Torley Company, The, Pittsburgh, Pa.—Buhoup flexible truck; Buhoup 3-stem passenger coupler; Pitt passenger coupler; Janney passenger coupler; Penn freight-coupler, with overhead and underneath release; steel castings. Represented by Stephen C. Mason, E. M. Grove, H. C. Buhoup and I. H. Milhken. Space 501, 503, 505.
- McCord & Company, Chicago, Ill.—McCord malleable iron and vanadium cast iron journal boxes for freight, passenger and engine tender equipment; draft gear; spring dampener; force feed locomotive lubricator in operation. Represented by Morrill Dunn, J. A. Lamon, W. J. Schlacks, R. L. McIntosh, H. E. Creer, A. C. McCord and H. S. Whitehair. Spaces 511-513.
- McCord Manufacturing Company, Chicago, Ill.—Universal window fixtures, consisting of flexible weather stripping; metal weather stripping; gravity wedging sash locks and racks; two new types of locks; sash balances; deck sash ratchets; copper insulated adjustable sash; sash lifts; McCord Universal air hose protector; drawn metal mouldings. Represented by Benjamin S. McClellan and Robert A. Flum. Space 507, 509.
- McCuen, J. P., Cincinnati, Ohio.—Car Couplers. Represented by J. P. McCuen. Space 182.
- McGraw Publishing Company, New York, N. Y.—Copies of Electric Railway Journal, Electric Railway Dictionary, Electric Railway Directory, Electric Railway Manual, Electrical World Engineering Record. Views of offices and printing plant. Represented by Hugh M. Wilson, D. T. Pierce, Henry W. Blake, Walter Jackson, Frank Kingsley, C. A. Babbiste, W. K. Beard, Harold Rudd and Joseph A. Kucera. Space 7.
- Main Belting Company, Philadelphia, Pa.—A specially constructed and treated belt for car lighting purposes. Represented by W. E. Fawcett and O. K. West. Space 188.
- Manning, Maxwell & Moore, Inc., New York, N. Y.—Will be representative Hendey lathes, shapers, milling machines, Gridley automatic machines, Cincinnati gear cutters and crank planers, Reed engine lathes, National heading machines; also a comprehensive exhibit embracing Hancock locomotive inspirators, check valves, steam valves and hose strainers, Consolidated locomotive pop safety valves and Ashcroft steam gauges. Represented by Frank P. Smith, James B. Brady, P. M. Brotherhood, Kester Barr, Robert A. Bole, W. H. McIntyre, J. N. Derby, H. P. Eilers, L. H. Mesker, M. A. Sherritt, Joseph H. Bush, John J. Faas, Charles L. Brown, A. J. Babcock, Thos. Stephens, W. H. Williston, F. C. Blanchard and B. T. Williston. Space 108 to 132.
- Manufacturers' Exhibit of Railway Supplies, Chicago, Ill.—Represented by W. N. Mitchell and R. S. Mitchell. Space 527.
- Massachusetts Mohair Plush Company, Boston, Mass.—Car seats of various manufacturers. Samples of all qualities of plain and figured plushes. Represented by W. W. Melcher. Space 22.
- Mid-Western Car Supply Company, Chicago, Ill.—Steel underframe in combination with body and truck bolster; Anderson friction draft gear; Mid-Western key yoke attachment, and spring and friction buffer block on exhibit track. Anderson friction draft gear type "A" and "B." Represented by J. E. Forsyth, Geo. E. Pratt and A. L. Jacobs. Space 328.
- Midvale Steel Company, The, Philadelphia, Pa.—One 33" steel tired wheel, bolted type of fastening, rolled steel center; one 33" steel tired wheel, bolted type of fastening, cast iron spoke center; one 33" rolled steel freight wheel; one 36" rolled steel coach wheel; one-heat treated driving axle. Represented by H. M. Doomer, D. Vincent Foster, Guiliam Aertsen, Ernest Harrah, T. W. Illingworth, A. E. Goodhue, Chas. Tietze, Col. Thompson, J. Bradley Patterson and W. S. Edger. Space 640.
- Milburn Company, The, Alexander, Baltimore, Md.—Milburn standard oxy-acetylene welding and cutting outfit complete, especially adapted to steam railroad practice. The steam acetylene generator headlight, a device utilizing waste steam, lighting the headlight by acetylene gas. Milburn lamps, portable acetylene construction, wrecking and inspection lights. Represented by C. R. Pollard, Jr., W. M. McCauley and Fredk. M. Maley. Space 208, 210.
- Moran Flexible Steam Joint Company, Louisville, Ky.—Flexible joints for steam, air, gas and liquid automatic barrel fillers. Represented by Thomas W. Moran and C. H. Jenkins. Space 207.
- Mudge & Company, Burton W., Chicago, Ill.—Garland car ventilators; Garland refrigerator car door fastener. Represented by Burton W. Mudge, Herbert Green, Robert M. Smith and George W. Bende. Space 400.
- Murphy Equipment Company, New York, N. Y.—Forged truck frame. Space on exhibit track.
- Nathan Manufacturing Company, New York, N. Y.—Injectors; lubricators; boiler washer and tester; steam fire extinguisher; Klinger water gauges; Hart blower valves; Hart globe and angle valves. Represented by Alfred Nathan, Edward S. Toothe, J. C. Currie, Otto Best, Chas. R. Kearns, J. S. Seeley, L. Kassander, N. W. Anthony and Edward Laterman. Space 578, 579.
- National Boiler Washing Company, Chicago, Ill.—Boiler wash-outs systems. Represented by W. W. White. Space 4.
- National Lock Washer Company, The, Newark, N. J.—National lock washers; car curtains; curtain fixtures; sash locks; sash balances. Represented by F. B. Archibald, R. L. Brown, W. C. Dodd, J. H. Horn and D. Hoyt. Space 533, 535.
- National Malleable Castings Company, The, Cleveland, Ohio.—Couplers; brake staff mechanism; malleable iron castings. Represented by F. R. Angell, T. Aishton, C. A. Bieder, W. E. Coffin, C. Gasper, R. T. Hatch, H. D. Hammond, J. H. Jaschka, C. L. Johnston, G. V. Martin, J. H. Merrill, Benj. Nields, Jr., R. H. Pilson, J. H. Slawson, J. A. Slater, L. S. Wright, G. F. Wilhelmy and E. O. Warner. Space 613, 615.
- National Tube Company, Shelby Steel Tube Company, Pittsburgh, Pa.—Hot-rolled locomotive tubes; superheated tubes; Kewanee unions; N. T. C. regrinding valves. Represented by G. N. Riley, P. J. Conrath, O. H. Kelly, J. T. Goodwin, J. A. Dillon, J. O. Ramsey, L. R. Cummings, J. G. Bateman, W. S. Bitting, J. E. Fleming, J. J. Kennedy, B. F. Bart.
- Nelite Work of General Electric Company, Cleveland, Ohio.—Complete line of lighting units for all types of car lighting service and lighting units for all classes of industrial and shop lighting, office, station, waiting-room and platform lighting. Represented by Arthur J. Sweet, L. C. Doane and N. B. Hazeltine. Space 337.
- Newhall Engineering Company, George M., Philadelphia, Pa.—Photographs of wrecking, locomotive and transfer cranes, pile drivers, etc., built by Industrial Works, Bay City, Michigan. Photographs of electric overhead traveling cranes built by Case Crane Company, Columbus, Ohio. Represented by David Newhall, Morton L. Newhall, A. F. Baumgarten, William L. Brown and William Waring. Space 386, 387.
- Newton Machine Tool Works, Philadelphia, Pa.—Internal cutting, cold saw cutting-off machine. Represented by H. W. Champion, N. P. Lloyd and H. W. Brown. Space 139, 141.
- New York Air Brake Company, The, New York, N. Y.—Exhibition rack representing the electro-pneumatic brake equipment for a locomotive and ten cars. This includes a steam driven generator from which the current is obtained. A new triple valve for freight service is shown in section. Represented by H. F. Bickel, W. T. Henry, C. E. Leach, B. J. Minnier, B. Pratt and F. M. Whyte. Space 330 to 338.
- Nickel Chrome Chilled Car Wheel Company, Pittsburgh, Pa.—Two 33-inch nickelized chilled car wheels. Represented by Robert C. Totten and Stephen D. Barnett. Space 519.
- Niles-Bement-Pond Company, New York, N. Y.—Niles new model car wheel borer, Pond reversing motor drive planer. Represented by James K. Cullen, George F. Mills, Charles L. Lyle, J. T. McMurray and Edward L. Leeds. Space 100.
- Norton Company, Worcester, Mass.—Complete display of Norton grinding wheels from the small wheels for internal grinding, a fraction of an inch in diameter, to the large, heavy coarse wheels used for grinding steel and iron castings, wheels, axles, etc. An attractive collection of photographs of the Norton car axle grinding machine. Medical exhibit. Represented by E. W. Dodge, Carl F. Dietz, Geo. W. Thomson and Geo. S. Welker. Space 144, 146.
- Norton Grinding Company, Worcester, Mass.—Car axles and car wheels ground on the Norton grinding machine. Grinding machines and parts equipped with protecting devices. Represented by C. O. Smith, Charles H. Norton and H. N. Cudworth. Space 144, 146.
- Norton, Inc., A., Boston, Mass.—Various types of jacks. Space 607.
- O'Malley-Beare Valve Company, Chicago, Ill.—Multi-plate valves and parts. Represented by Edward O'Malley and Thomas O'Malley. Space 218.
- Oxweld Acetylene Company, Chicago, Ill.—Oxy-acetylene and oxy-hydric welding apparatus in operation cutting metal twenty-four inches thick. A demonstration of the welding of a complete set of boiler tubes into the flue sheet. Represented by W. J. Knapp, G. E. Kershaw, W. J. Fritz, C. B. Moore and J. A. Warfel. Space in the Acetylene Annex, 3-4 Pier End.
- Pantasote Company, The, New York, N. Y.—Pantasote car curtains and upholstery. Agosote headlinings and interior trims for passenger cars. Represented by John M. High, W. A. Lake and A. S. Barrows. Space 404, 406.
- Parkeburg Iron Company, The, Parkesburg, Pa.—Charcoal iron boiler tubes. Represented by H. A. Beale, Jr., W. H. S. Bate-

- man, C. L. Humpton, H. C. Hunter, J. A. Kinlead, L. P. Mercer, J. H. Smythe and George Thomas, 3d. Space 388.
- Parsons Engineering Company, Wilmington, Del.—Parsons system of combustion applied to a locomotive fire box. Full size steel model made in section. Space 514.
- Pease Company, The C. F., Chicago, Ill.—The Pease peerless blue printer with automatic washing and drying machine; Pease peerless direct blue line equipment; Simplex blue print paper coating machine; motor driven trimming table. All in operation. Represented by C. F. Pease, P. M. Morgan, T. K. Murney and J. J. Newlin. Space 170.
- Pennsylvania Flexible Metallic Tubing Company, New York, N. Y.—Metal hose and flexible metallic tubing for conveying air, steam, water, gas and oil; flexible copper hose for connecting locomotive to boiler washing line. Also blower connection to locomotive. Represented by J. M. Odenheimer, C. A. Meyer and B. C. Willis. Space 312, 314.
- Pilliod Company, The, Swanton, Ohio.—Model of Baker locomotive valve gear. Represented by R. H. Weatherly, F. S. Wilcoxon, K. J. Eklund, R. G. Graham, R. F. Darby, C. M. Jennelle and F. E. Pilliod. Space 562, 563.
- Pittsburgh Steel Foundry Company, Pittsburgh, Pa.—Two cast steel truck side frames interlocking into cast steel journal boxes with an interlocking cast steel spring plank. Represented by H. V. Seth, O. S. Pulliam and John Allison. Space 611.
- Pneumatic Jack Company, Inc., Louisville, Ky.—Tandem cylinder pneumatic jacks; car and roundhouse jacks; locomotive jacks, standard and special journal jacks. Represented by L. J. Dittmar and J. S. Leake. Space 376.
- Pocket List of Railroad Officials, The, New York, N. Y.—Pocket List of Railroad Officials. Represented by J. Alexander Brown, Harold A. Brown and Chas. L. Dinsmore. Space 7.
- Pressed Steel Car Company, New York, N. Y.—Photographs of product in booth. Represented by J. C. Anderson, L. O. Cameron, O. C. Gayley, H. S. Hammond, C. A. Lindstrom, J. F. MacEnulty, J. H. Mitchell, C. E. Postlethwaite, N. S. Reeder, J. H. Regan, M. S. Simpson, J. S. Turner and W. H. Wilkinson. Space 620.
- Pyle-National Electric Headlight Company, Chicago, Ill.—Pyle-National latest type "E" electric turbo generator set for locomotive electric headlights. Represented by R. C. Vilas, H. P. Bayley, M. A. Ross, J. Will Johnson, C. P. McGinnis and Chas. W. Drake. Space 537.
- Pyrene Manufacturing Company, New York, N. Y.—Pyrene fire extinguisher in three styles enameled, brass and nickel plated. Represented by E. M. Davidson, George H. Peterson and Thomas Areson. Space 201.
- Quigley Furnace & Foundry Company, Springfield, Mass.—Drawings of the Quigley furnaces. Represented by C. K. Lasseter, W. S. Quigley and W. G. Ferguson. Space 121.
- Railway Age Gazette, New York, N. Y.—Publishers of the Railway Age Gazette, American Engineer and Railway Journal, Signal Engineer, Daily Railway Age Gazette and books on the subject of steam transportation. Represented by E. A. Simmons, L. B. Sherman, Samuel O. Dunn, Bradford Boardman, C. R. Mills, Henry Lee, Roy V. Wright, William Forsyth, R. E. Thayer, F. S. Dinsmore, W. E. Hooper, E. S. Faust, W. W. Newcomb, A. E. Hooven, T. F. Crossman, F. H. Thompson, E. A. Averill, W. D. Horton, K. G. Cloud and Miss Gegen. Space 1.
- Railway Electrical Engineer, Chicago, Ill.—Railway publication. Represented by Edward Wray. Spaces 625-627.
- Railway List Company, The, Chicago, Ill.—Railway Master Mechanic. Monthly Official Railway List; Railway Engineering and Maintenance of Way. Represented by William E. Magraw, Chas. S. Myers, L. F. Wilson, J. M. Crowe and O. W. Middleton. Space 35.
- Railway Materials Company, Chicago, Ill.—Steel back brake shoes and Ferguson shop furnaces. Represented by T. B. Cram, E. C. Folsom, Geo. Hoeffle, C. M. Mendenhall, J. F. Schurch and W. M. Simpson. Space 559.
- Railway Utility Company, Chicago, Ill.—Exhaust ventilators; intake ventilator and air washer; gas lamp jack; oil lamp jack; thermostatic control of car heating with steam, electricity and hot water systems; steam hose couplers; locomotive equipment with flexible metallic joints; automatic freight car door locks; electric vacuum car cleaners. Represented by Wm. J. Pine, Lee P. Hynes, E. J. Magerstadt, J. P. Gallagher, C. A. Luckey and E. R. Field. Space 617.
- Railway & Engineering Review, Chicago, Ill.—Railway newspapers. Represented by Willard A. Smith, P. G. Stevens and Harold A. Smith. Spaces 12-14.
- Ralston Steel Car Company, Columbus, Ohio.—Steel car on exhibit track. Represented by Jas. S. Ralston, A. A. McAdam, W. T. Sheldon and F. E. Symons. Space on exhibit track.
- Reliance Electric and Engineering Company, Cleveland, Ohio.—Reliance adjustable speed motors; Oesterlein motor-driven milling machine; D. C. & A. C. constant speed motors; motor headstocks for woodworking lathes. Represented by H. M. Hitchcock, D. G. Darling, A. W. Ray, E. A. Lewis and S. C. Potter. Space 134, 136.
- Remy Electric Company, Anderson, Ind.—The American Electric Headlight. Represented by T. B. Arnold, G. V. Bain, H. W. Griffith and L. A. Darling. Space 205.
- Restein Company, Clement, Philadelphia, Pa.—Locomotive air pump packing; throttle steam packing; locomotive steam way packing; steam hammer packing; hand hole and man hole gaskets; tender hose; steam hose; flexible metallic connections for between engine and tender. Represented by H. O. Fettinger, Norman B. Miller and W. J. Cromie. Space 16.
- Richmond Staybolt Drilling Machine Manufacturing Company, Richmond, Va.—A staybolt drilling machine. Represented by E. W. Fishburne. Space 138.
- Robinson Coupler Company, The, Washington, D. C.—The Robinson automatic air and steam hose connector. Represented by Clinton M. Smith. Space 32.
- Rochester Germicide Company, Rochester, N. Y.—Disinfectants; perfection drinking fountains; liquid soap and urns; sanitary paper towels; sanitary supplies. Represented by C. S. Whitman. Space 382.
- Rubberset Company, Newark, N. J.—General line of Rubberset paint brushes and products of the Rubberset Company. Represented by A. L. Holtzman. Space 536.
- Safety Car Heating and Lighting Company, New York, N. Y.—Pintsch car lighting system; safety electric axle dynamo lighting system; thermo jet car heating system; Pintsch and electric car lighting fixtures; steam traps, valves, etc.; indirect lighting fixtures; hot water car heating system. Represented by R. M. Dixon, J. A. Dixon, A. C. Moore, J. S. Henry, Geo. E. Hulse, E. E. Allbee, Wm. L. Garland, Chas. B. Adams, J. G. Van Winkle, Wm. St. John, Geo. H. Chadwell, M. F. Elliott, R. H. Harvey, A. B. Mills, R. C. Shaal, L. Schepmoes, J. M. Towne and W. I. Thompson. Space, platform on pier.
- Sargent Company, Chicago, Ill.—E. S. E. blow-off valve; iron-clad water glass protector; "Klinger" reflex gauges; E. S. E. water glass cock; Osborne valves. Represented by Frank G. Dunbar and George H. Sargent. Space 529.
- Scarrett-Comstock Furniture Company, St. Louis, Mo.—Coach seats; reclining chairs for coaches. Space 20.
- Scullin-Gallagher Iron & Steel Company, St. Louis, Mo.—Six-wheel passenger car truck frame; two complete trucks showing types of truck side frames with divided journal box; double body bolster. Represented by Frank L. Norton, G. L. L. Davis, H. H. Waldron, R. A. Dugan and L. A. Shepard. Spaces 153 to 159.
- Sellers & Company, Wm., Incorporated, Philadelphia, Pa.—Locomotive injectors and accessories; drivers as used upon face plates, and turret rest, of extra high power locomotive driving wheel lathe; drivers as used upon face plates, and turret rest, of extra high power car wheel lathe; hangers, couplings, bearings, for the transmission of power. Represented by Strickland L. Kneass, John D. McClintock, Charles T. Wilson, Clinton B. Conger and Walter W. Storm. Space 623.
- Shelby Steel Tube Company.—In space 548 with the National Tube Company.
- Simplex Railway Appliance Company, Chicago, Ill.—In space 185, 186 with American Steel Foundries.
- Sinclair Company, Angus, New York, N. Y.—Railway newspapers. Represented by Angus Sinclair. Space 33.
- Sprague Electric Works of the General Electric Company, New York, N. Y.—Steel armored air brake hose; steel armored car heating hose; steel armored hose for shop use; steel armored hose fittings; flexible steel conduit; Greenfield rigid conduit; flexible steel armored cable; outlet boxes and conduit fittings; electric fans and electric hoists. Represented by A. E. Braddell, F. W. Hall, H. H. Hornsby, C. Johnson and H. W. Uhl. Space 379, 381.
- Standard Car Truck Company, Chicago, Ill.—One full-size flat car equipped with roller bearing lateral and radical motion trucks. Barber roller center plate. Represented by J. C. Barber, F. L. Barber and James T. Milne. Space on exhibit track.
- Standard Coupler Company, New York, N. Y.—Standard steel platforms; couplers; Sessions-Standard friction draft gears. Represented by Geo. A. Post, A. P. Dennis, E. H. Walker, R. D. Gallagher, Jr., and Geo. A. Post, Jr. Space 31.
- Standard Roller Bearing Company, Philadelphia, Pa.—Roller bearing car journal boxes, assembled and dis-assembled; steel balls; journal roller bearings; agricultural roller bearings; roller motor bearings; standard taper roller bearings; roller thrust bearings; ball thrust bearings; grooved ball end thrust bearings; annular ball bearings and special anti-friction bearings. Represented by R. S. Woodward, F. M. Germane, Charles H. Machen, J. G. Cooley and M. G. Sperzel. Space 304.

- Standard Steel Car Company, New York, N. Y.—Represented by J. M. Hanson, J. B. Brady, Wm. Libkeman, R. L. Gordon, H. G. Macdonald, J. P. Rapp, J. E. Bradley, E. S. Keith and Howard Carlton. Space 28.
- Steel Specialties Company, Boston, Mass.—Worth wedge washer or nut safe-guard. Represented by A. L. Cole and J. W. Dana. Space 184.
- Storrs Mica Company, Owego, N. Y.—Samples mica headlight chimneys and mica lantern globes; also samples Thompson indestructible hose clamp for use on air brake, air signal, steam and locomotive feed water house. Represented by A. P. Storrs and Charles P. Storrs. Space 591.
- Street, Clement F., Schenectady, N. Y.—One Street locomotive stoker. Represented by Clement F. Street, T. R. Brown, N. M. Lower and Chas. F. Gernert. Space 403, 405.
- Symington Company, The T. H., Baltimore, Md.—Symington journal boxes, Farlow draft gear. Represented by T. H. Symington, C. J. Symington, W. W. Rosser, E. H. Symington, I. O. Wright, B. S. Johnson, T. C. de Rossett, M. K. Kimberly, A. H. Weston and D. F. Mallory. Space 568, 569.
- Tabor Manufacturing Company, The, Philadelphia, Pa.—Inserted tooth saws. Represented by H. W. Brown and Wm. J. Knoz. Space 139, 141.
- Templeton, Kenly & Company, Ltd., Chicago, Ill.—Coach, locomotive and truck jack. Represented by W. B. Templeton and Arthur C. Lewis. Space 621.
- Topping Brothers, New York, N. Y.—Ball bearing jacks, high speed jacks; pillow blocks; "Perfect" universal joints; spring winders. Represented by William E. Hansen and Charles L. Crabb. Space 608.
- Transportation Utilities Company, New York, N. Y.—Vestibule diaphragms, curtains, diaphragm attachments, weather-proof windows, interior car curtains, steel doors and ladders, Chan-arch car flooring, weather-proof window posts. Represented by W. L. Conwell and H. B. Chamberlain. Space 572, 573.
- Tyler Company, The W. S., Cleveland, Ohio.—Draftac spark arrester netting; square mesh spark arrester netting; copper, brass, galvanized, iron and steel wire cloth for car work; testing sieves. Represented by M. P. Reynolds, W. P. Cahall and L. D. Winters. Space 531.
- Union Draft Gear Company, Chicago, Ill.—Cardwell friction draft gears, small drop demonstrating machine. Represented by J. R. Cardwell, L. T. Canfield, W. G. Krauser, J. E. Tareltan and J. W. Hathaway. Space 409.
- Union Spring & Manufacturing Company, Pittsburgh, Pa.—Coil and elliptic springs; pressed steel box lids; steel castings; Kensington all steel journal boxes; pressed steel spring plates; cast steel journal box. Represented by A. M. McCrea, L. G. Woods, H. B. Darlington, Chas. S. Foller, A. C. Woods, T. B. Arnold, W. F. LaBonta and H. F. Ayres. Space 528, 530.
- Universal Draft Gear Attachment Company, Chicago, Ill.—Cast steel draft arms; twin spring draft gear; cast steel keyed type drawbar yokes; cast steel riveted type drawbar yokes. Represented by C. J. Nash and C. C. Kinsman. Space 34.
- United States Light & Heating Company, The.—New York, N. Y.—Axle light equipment, stationary and vehicle batteries, electric starters for gasoline trucks and vehicles; complete assortment of parts and partly assembled apparatus. Represented by W. P. Hawley, D. W. Pye, J. Allen Smith, W. L. Bliss, A. W. Donop, L. S. Cunny, J. A. White, William Bauer, C. W. Bradford and W. G. Davis. Space 320 to 326.
- U. S. Metal & Manufacturing Company, New York, N. Y.—Reception Booth. Represented by B. A. Hegeman, Jr., Chas. C. Castle, E. D. Hillman, F. C. Dunham, H. A. Hegeman, J. J. Ross and H. K. Porter. Space 622.
- United States Metallic Packing Company, The, Philadelphia, Pa.—United States metallic piston rod, valve stem, and air pump rod packings for locomotives, of both King and Multi-angular type; Leach pneumatic track sander; Gollmar pneumatic bell ringer; indestructible oil cup, etc. Represented by Morris B. Brewster, C. B. Ford, Elliott Gurtiss, John S. Mace, Harry M. Wey and C. L. Mellor. Space 517.
- United States Metal Products Company, New York, N. Y.—Steel doors, trim and sash for steel coaches; car seats. Represented by S. A. Walker. Space 176.
- Valentine & Company, New York, N. Y.—"Valspar," a water-proof varnish; their system of car painting. Represented by Langdon B. Valentine, Lawson V. Pulsifer, I. H. Munford and J. E. Ham. Space 522.
- Van Dorn & Dutton Company, The, Cleveland, Ohio.—Hard service portable electrically operated drills and reamers. Represented by Franklin Schneider, F. W. Sinram, A. K. Baxter and A. N. Frecker. Spaces 133, 135.
- Virginia Equipment Company, Toledo, Ohio.—Dust guards. Represented by Lacy Y. Williams and Grafton A. Dodd. Space 377.
- Vixen Tool Company, Philadelphia, Pa.—Vixen files and rail planers. Represented by Walter D. Craft and H. Rawcliffe. Spaces 164, 166.
- Ward Equipment Company, New York, N. Y.—Car heating apparatus; passenger car ventilators; yard plugs and car receptacles for charging storage batteries on electrically lighted cars; Ward steam couplers; end train pipe valves; Unotherms; improved car heating material of all kinds. New equipment for locomotives using exhaust steam from the air brake pump for heating passenger trains. Represented by George B. Culver, J. F. Deems, Peter Fink, Charles E. Lowell, Roland B. Lowther, C. F. McCuen, Lewis B. Rhodes, Lewis B. Rhodes, Jr., E. C. Post, Walter B. Van Beuren, John E. Ward and A. L. Whipple. Spaces 550, 551.
- Warner & Swasey Company, The, Cleveland, Ohio.—One No. 3A universal hollow hexagon turret lathe bar capacity 3 3/4" chucking capacity 15". Represented by R. G. Buyer, C. J. Stilwell and F. B. Castle, demonstrator. Spaces 161, 163.
- Watson-Stillman Company, New York, N. Y.—Space 538.
- Welsbach Company, Gloucester, N. J.—Incandescent gas lamps and mantles for railway stations, shops, etc. Represented by Townsend Stites, Alphonso Mason, Chas. W. Wardell, Fred. N. Hamerstrom, Thomas J. Litle, Jr. and Elmer L. Knoedler. Spaces 40, 42.
- West Disinfecting Company, New York, N. Y.—Disinfectants and disinfecting appliances; West liquid soap dispensers and Beau Brummell liquid soap; fumigating apparatus; paper towels; Pipe Klen-Zo. Represented by Mr. Geo. L. Lord and Mr. H. E. Daniels. Space 516.
- Western Railway Equipment Company, St. Louis, Mo.—Models of Acme automatic brake adjuster; Western sill and carline pockets; steel carline; brake jaws; pipe clamps; interchangeable bearing and wedge. Represented by Louis A. Hoerr, Sterling Campbell and R. L. Langtion. Space 370 to 373.
- Western Steel Car & Foundry Company, New York, N. Y.—Photographs in booth. Space 620.
- Westinghouse Air Brake Company, Pittsburgh, Pa.—Reception Booth. Represented by A. L. Humphrey, E. A. Craig, Robert Burgess, T. L. Burton, Jos. R. Ellicott, F. V. Green, Chas. R. Ellicott, S. J. Kidder, F. M. Nellis, C. J. Olmstead, R. P. Noble, E. L. Andreon and C. P. Cass. Space 19, 21, 23, 25, 27, 29.
- Westinghouse Church, Kerr & Company, New York, N. Y.—Plans and photographs showing the design and construction of machine shops, erecting shops, boiler shops, locomotive and freight car blacksmith shops, stripping shops, planing mills, foundries, power plants, storehouses, roundhouses, etc., with which Westinghouse, Church, Kerr & Company have been connected as engineers or constructors. Represented by R. C. Barnard, E. R. Cate, H. S. Clark, W. G. Clark, T. N. Gilmore, S. E. Junkins, H. R. Kent, H. H. Kerr and C. M. Vail. Space 19 to 29.
- Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.—Reception Booth. Represented by Chas. Robbins, F. H. Herzsche, A. G. Popcke, W. H. Patterson, H. C. Mode, R. E. S. Geare, R. F. Moon, W. H. Easton and F. W. Harrison. Space 19, 21, 23, 25, 27, 29.
- Westinghouse Machine Company The, East Pittsburgh Pa.—Reception Booth. Represented by E. H. Sniffin, L. L. Brinsmade, H. A. Rapelye and W. B. Brew. Space 19, 21, 23, 25, 27, 29.
- Wheel Truing Brake Shoe Company, Detroit Mich.—Abrasive brake shoes. Represented by J. M. Griffin. Space 515.
- Williams Company, Inc., G. H. Cleveland, Ohio.—Buckets for Steam Shovels. Represented by G. H. Williams. Space 177.
- Wilmarth & Morman Company, Grand Rapids, Mich.—Surface grinders; wet tool grinders; lathe center grinders; New Yankee drill grinders; cutter and reamer grinders; loose pulleys. Represented by Chas. E. Meech, B. C. Saunders and C. H. Slaughter. Space 160, 162.
- Wilson Remover Company, New York, N. Y.—Varnish and paint removers; methods of removing paints from wood and metal by spraying and vacuum cleaning. Represented by J. MacNaull Wilson and J. Whitney Wilson. Spaces 202, 204, 206.
- Wood, Guilford S., Chicago, Ill.—Wood's flexible nipple end air hose protector; the Monogram train pipe bracket; standard improved all steel warehouse truck. Represented by Guilford S. Wood and D. F. Jennings. Space 604.
- Yale & Towne Manufacturing Company, The, New York, N. Y.—Chain blocks; electric hoists; trolleys; special hoisting devices; padlocks; signal padlocks; indicator padlocks; dining car locks; Yale checks; Blount checks; station hardware; latches; deadlocks; mono locks. Represented by R. T. Hodgkins, W. A. Hall, A. W. Patterson, Jr., D. A. Wright, F. A. Mavcumber, J. F. Stoldt and H. H. Ricketts. Space 129, 131.
- Zug Iron & Steel Company, Pittsburgh, Pa.—Staybolt and engine bolt iron; forging iron; chains for steam shovels. Represented by John H. McCloy. Space 209.